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THE TREATMENT OF FRONTAL SINUS SUPPURATION.*

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The treatment of any lesion should aim to overcome the cause and results of its existence. Frontal sinus suppuration is caused, primarily, by infection, but its obstinacy and continuance are due also to certain pathologic changes occurring in the wall of the sinus.

Attacks of acute inflammation may subside without after-effects but, if repeated, certain morphologic changes result which are followed by prolonged suppuration. These changes affect the drainage of the sinus and the integrity of its lining; hence, any operative measures should aim to supply ample drainage and restore, so far as possible, the integrity of the lining of the sinus. The amount of exudate is a variable factor influenced by the virulence of the infection, the obstruction at the ostium frontale, and the changes in the mucosa. The latter may be comparatively smooth, or there may be great thickening from excess of connective tissue formation or abundant polypoid masses. The chief factor in the prolongation of sinus suppuration is inadequate drainage occurring in a more or less partially closed, mucous membrane lined, bony cavity. Such conditions could never take place on a flat mucous surface.

Hence, the logical, conservative treatment of this condition demands the establishment of adequate drainage and, in certain cases, local treatment of the sinus lining. On the other hand, the symptoms may sometimes be overcome by destructive measures; i. e., the obliteration of the sinus.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 24, 1916.

Symptoms: It is not my purpose to consider the signs and symptoms but, suffice it to say, that the pain and tenderness indicate roughly the degree of tension of the exudate, the amount of which depends upon several factors, such as the size of the sinus, the virulence of the infection, and the secondary sinus wall changes.

Healing of suppurating cavities: When we consider the subject of suppuration in different parts of the body, certain facts are indisputable. Abscess cavities in soft tissues heal only when such cavities are obliterated, as a result of the processes of repair, e. g., furuncle, cellulitis, residual abscesses in the peritoneal cavity, etc. Thoracic empyema will persist either until the lung again fills the cavity or until the chest wall is made to approach the lung by some extensive plastic operation, as is sometimes necessary in very chronic cases. Healing ensues in these two instances only as the suppurating cavity is gradually obliterated.

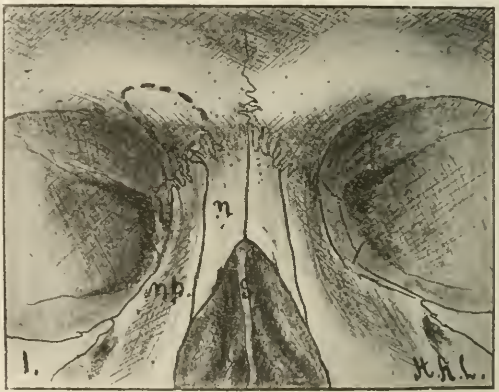

Figure 1. Anterior view frontal region; projected outline of opening into sinus through which all extranasal operating is performed on both sinuses: n, nasal bone; np, nasal process; s, septum; l, lachrymal bone.

In the case of the frontal sinus we have to deal with a natural bony cavity lined with epithelium. Suppuration in such a cavity will cease if it is obliterated or if all causes of suppuration are overcome; hence, in frontal sinus suppuration treatment may be directed towards obliteration of the cavity, or restoration of drainage, or a combination of both.

History: Let us consider first some of the various methods of treating these cases. We may operate intra-nasally, extra-nasally, or we may combine these two methods of approach. Many cases recover under any of these methods, but there is a considerable percentage which it has been difficult to cure; hence, the occasion of the more radical methods that have been devised. The ideal method should combine efficiency, safety, absence of deformity, and preservation of the sinus.

1. *Intra-nasal methods*: Many sinuses can be probed and then irrigated, but irrigation is of little practical value and such cases would probably resolve spontaneously. On the other hand, one cannot be absolutely certain that the probe enters the sinus and not the anterior ethmoid cell, as represented by a so-called frontal bulla.

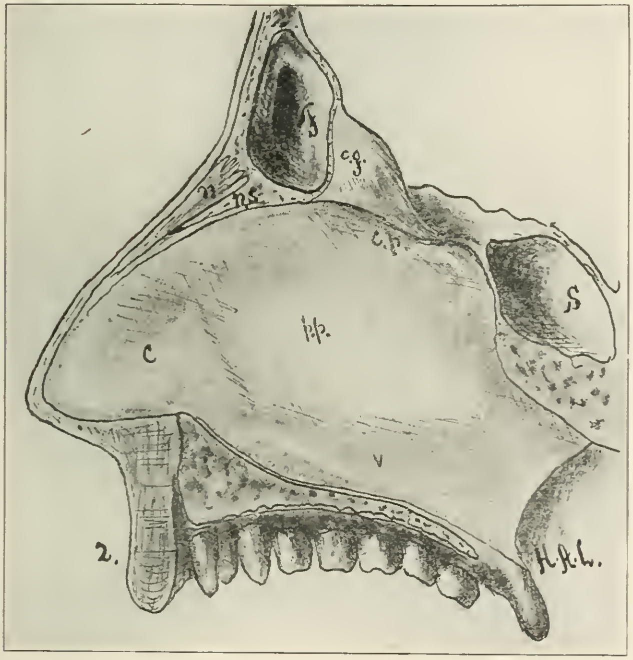

Figure 2. Nasal septum, also the dense bone below frontal sinus (F) in the median line; n, nasal bone; ns, nasal spine of frontal bone; cg, crista galli.; cp, cribriform plate; S, Sphenoidal sinus; pp, perpendicular plate; c, triangular cartilage; v, vomer.

The sinus opens into the middle meatus through the ethmoid cells, in one way or another, and the passage may be narrow on account of these cells or because of the position of the anterior end of the middle turbinate. As a preliminary step in all cases, the front portion of this turbinate should be generously removed and the neighboring, thin-walled ethmoid cells broken down. This may suffice for cure and, therefore, nothing further be required. It will fail if obstruction to drainage persists or if the sinus is filled with granulations or polyps.

There are operations devised for breaking through the nasal floor of the sinus from below by means of burr drills and rasps, often combined with shields to protect the posterior sinus wall. Undoubtedly, much of the sinus floor may be removed by this method and many favorable results be obtained but there are serious objections to very radical, intra-nasal methods. One can never be sure of the local anatomy without direct inspection or know just where the end of the instrument is cutting and such operating calls for the highest degree of skill. Even then, in the absence of direct inspection, there is doubt as to the thoroughness of bone removal and there is always an element of danger and uncertainty. Furthermore, the sinus itself cannot be properly inspected and, if neces-

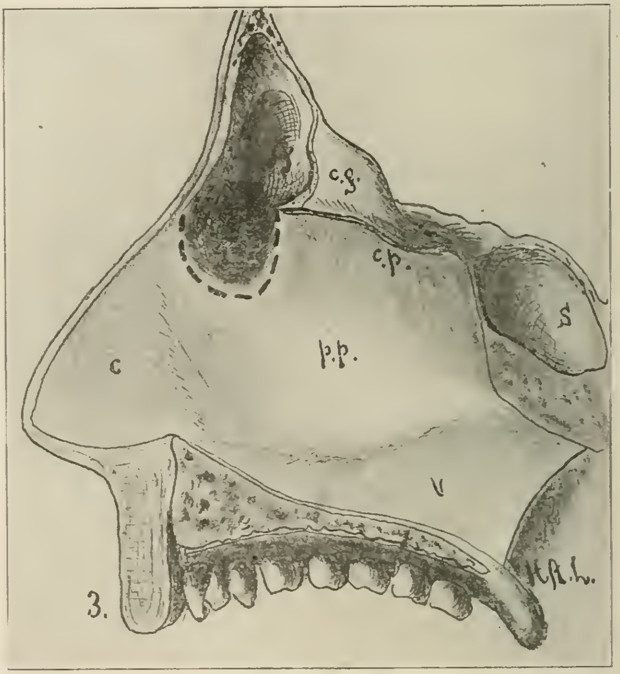

Figure 3. Nasal septum seen in Figure 2 after removal of floor of both sinuses, looking into the right sinus. The median projection of the crista galli and cribriform plate region is shown, also the portion removed by burrs from the perpendicular plate of the ethmoid, thus allowing easy access to both sinuses through either nostril.

sary, treated. If a field of operation is not open to inspection and the various steps carried out with precision, it is to that extent "blind operating."

However, either as a means of cure or as a preliminary step for more radical measures, the front portion of the middle turbinate and the adjacent cells should be removed.

2. *Extra-nasal methods*: These are generally combined with certain intra-nasal operating. The external opening serves as a means of exposing the sinus cavity both for inspection and for the purpose of enlarging the opening into the nose. The Ogston-Luc method is a step in the right direction for the external opening is not large enough to give rise to deformity but frequently the nasal opening proved to be too small and subsequently filled with soft tissue. There was no aim here to destroy the sinus.

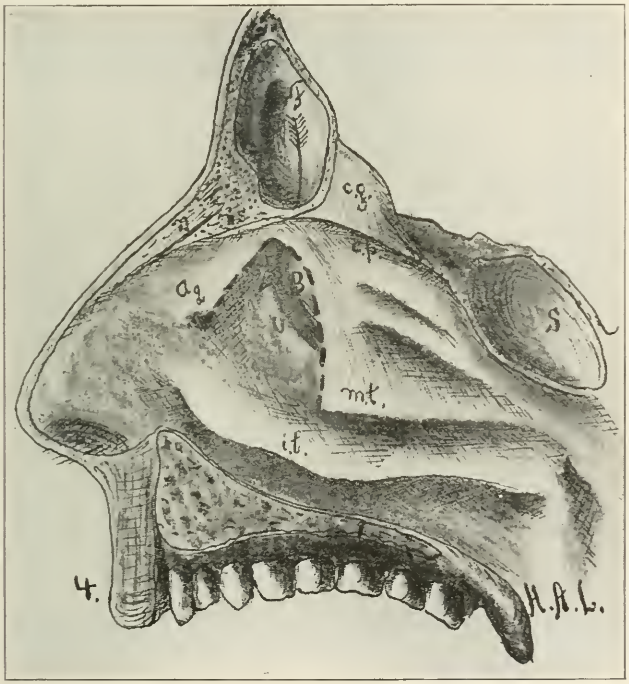

Figure 4. Outer wall of right nasal fossa. Arrow passes from sinus to infundibulum, between ethmoid bulla (B) and unciform process (u). Portion of middle turbinate removed: ag, agger nasi cell at front of middle turbinate.

The Kunt method was an attempt to destroy the sinus by letting the facial wall collapse, while the Jansen method sought the same object by removal of the orbital wall and, still more radical was Riedel's operation which removes both facial and orbital walls. All of these operations produced unnecessary deformity. Of course many cures followed but failure was due either to inability to destroy the sinus or to inefficient drainage if any sinus remained.

These methods have been largely given up for the more recent Killian technic. This combines both the attempt to destroy the sinus and to establish efficient drainage. Its advantages are that the sinus can be thoroughly and safely explored and the ethmoid region exposed to treatment, and the results are said to be better than those of any of the above methods. The disadvantages of this method are the following: An unnecessary deformity results depending upon the skill of the operator and the size of the sinus. The contents of the orbit are frequently injured, including the lachrymal apparatus, the superior oblique muscle, and the supraorbital nerve and vessels. Soft parts are bruised and there is

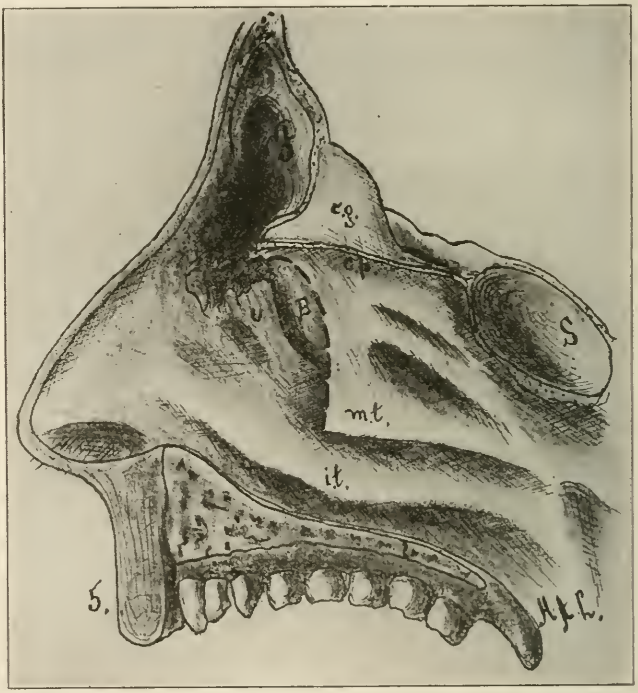

Figure 5. Outer wall of nasal fossa seen in Figure 4 after removal of dense bone forming floor of right sinus leaving a thin anterior wall; u, unciform process broken off in vicinity of ethmoid cells opposite the lachrymal bone.

much subsequent edema and sometimes considerable sepsis. The great objection to this method is that the wall of bone, comprising the upper portions of the lachrymal bone and nasal process of the superior maxilla and the adjacent portion of the frontal bone, is removed. This allows the soft parts to sink in and, later, be drawn in by scar tissue, thereby shutting off the distal portion of the sinus which prevents cure. It must be remembered that all of the sinus is in the frontal bone, hence, any narrowing at the level of its floor is disadvantageous. In all of the very chronic cases Nature tends to lessen the size of the sinus by filling in the narrow angles and borders with permanent scar tissue. Therefore, at operation this should not be removed. For the above reasons the Killian technic leaves much to be desired in an operation for the cure of these obstinate cases.

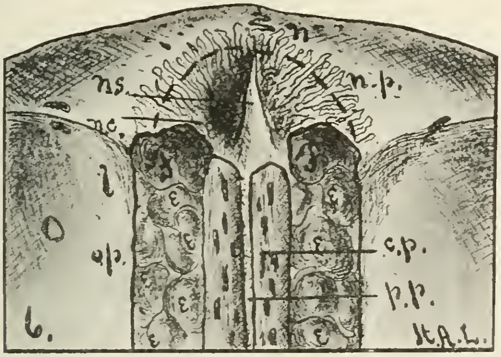

Figure 6. Looking up at the lower surface of the frontal bone disarticulated at the level of the naso-frontal suture; upper portion of ethmoid bone in situ; n and np, broad serrated area for articulation with thickened ends of nasal bones and nasal processes of superior maxillae; ns, nasal spine; nc, nasal crest; F, hiatus frontalis; l, articulation for lachrymal bone; op, os planum; pp, perpendicular plate; cp, cribriform plate external to which is a line representing the upward prolongation of the middle turbinate, still more externally are the ethmoid cells, e; O, roof of orbit. Dotted line shows area forming floor of both sinuses to be removed.

An operation for chronic cases: The writer has practiced for the last four years a technic which aims to be both conservative and radical, incorporating certain modifications from time to time. It is believed to be indicated in all chronic cases requiring any very radical or any external operation. It is a safe method in the hands of anyone competent to do frontal sinus surgery. The convalescence is short, but little after-treatment is required, and most of our cases have been discharged as cured in a few weeks. In a series of thirty cases, under the care of Dr. O. A. Lothrop or myself, there was one fatality due to a pulmonary embolus which was secondary to a mastoiditis operated upon shortly before the frontal sinus operation. This death must, therefore, have only a remote connection with the last operation. One case was opened a second time because of persisting nasal discharge and the sinus was found full of polyps. In this instance the sinus was not carefully curetted at the first operation. The amount of curetting must always depend upon the condition of the soft parts when exposed to view at operation. Membrane which tends to form polyps should be carefully curetted, as should exuberant granulations, but, as a rule, the mucous membrane inflammation subsides when the outlet for drainage is adquate. It is unwise to curette the sinus wall so as to expose the bone for its nutrition is endangered thereby. In many of the cases the patients have not complained of any nasal discharge dating from operation and in most instances it has ceased in the course of a few weeks. The relief from pain is immediate and there remains for a few days only such tenderness as is incidental to the operation. The most troublesome, previously existing fistulae are closed at once and in no case has a new external fistula developed. The swelling of soft parts is a minimum and, at

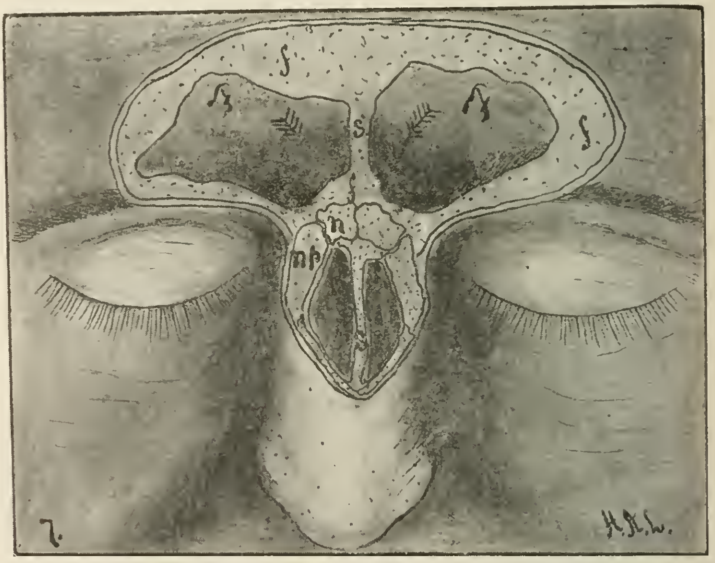

Figure 7. Front wall of both sinuses and of upper nasal fossae removed showing dense mass of bone behind the base of nose forming median portion of floor of sinuses: n, end of nasal bone; np, nasal process; s, septum of frontal sinus and of nose. Arrows pass through ostia to nose.

most, is limited to a little edema of the upper lid, insufficient to close the eye. In the later operations of our series, supra-orbital anesthesia has been avoided. In all cases both sinuses have been utilized in order to obtain all the floor space the anatomy will allow, regardless of whether the sinusitis was single or double. About one-third of the cases had trouble on both sides. In no instance has any complication occurred in the previous healthy side and, in the presence of satisfactory drainage, we do not believe such would occur. We have known of acute sinusitis following simple exploration of a healthy sinus where the wound of entrance was closed and the trouble was consequent on infected blood clot retained in the otherwise undisturbed sinus. Furthermore, it is probable that the healthy mucous membrane from the normal sinus epidermizes the diseased one. Our results demonstrate the wisdom and harmlessness of utilizing the floor of both sinuses in all cases, irrespective of the presence of single or double sinusitis. The efficacy is much increased and the technic made easier, all being accomplished by means of a single small external opening combined with intra-nasal manipulations, so that at all times the cutting instrument is in view.

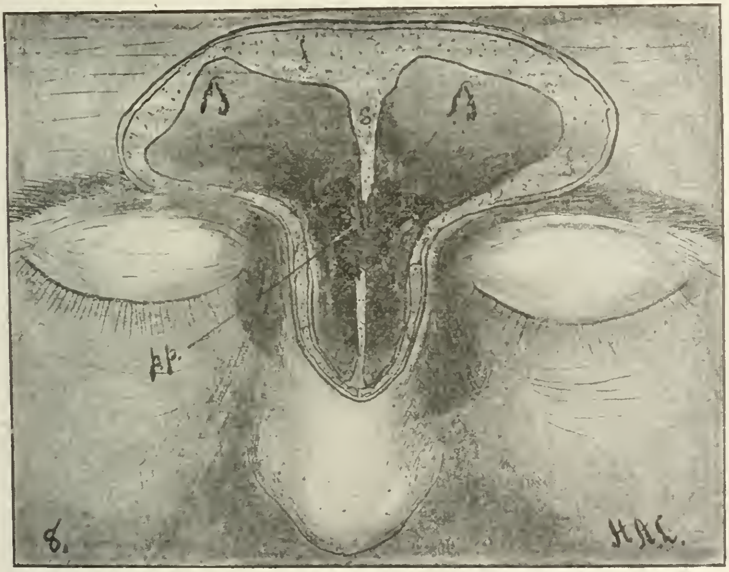

Figure 8. Same region as shown in Figure 7 after removal with burr drills and rasps, looking into the nasal fossae; pp, perpendicular plate deeply notched. A probe entering either naris would pass readily into either sinus.

The essential feature of this technic is the removal of the entire nasal floor of both sinuses, laterally from lachrymal to lachrymal bone and, antero-posteriorly, from the thinned bone at the region of the naso-frontal suture back to the posterior wall of the sinus near the crista galli, together with the interfrontal and the underlying inter-nasal septa.

Anatomy. In previous articles (*Annals of Surgery,* June, 1914, and *Journal of the American Medical Association,* July 10, 1915), the essential anatomy has been carefully considered and some cases reported; hence, these matters will be only briefly mentioned here.

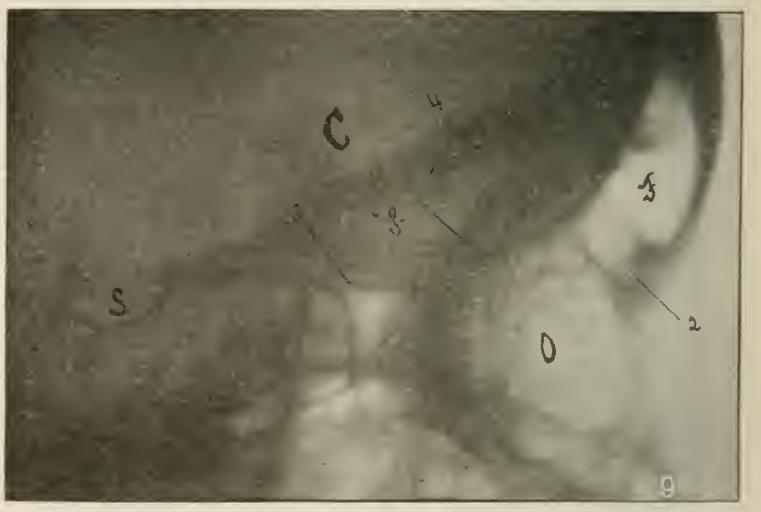

Figure 9. Lateral Roentgenogram showing dense bone (2) at the base of a large frontal sinus, and the relative distance from the base of the nose to the crista galli (cg); 3, cribriform plate; O, orbit; S. sella turcica.

The ostium frontale is situated in the floor of the sinus toward the posterior angle and there should be no exploration behind or internal to this point on account of the posterior wall and cribriform plate. Around this opening are thin walls making anterior ethmoid cells and these are readily broken through. As shown in the various cuts, there is always thick and dense bone representing the upper thickened ends of the nasal bones and nasal processes of the maxillæ, and the region where the interfrontal septum and median plate of the ethmoid and frontal spine come together. This makes a confluent mass at the floor of the sinus, not only in the median line but extending laterally in front of the ethmoid cells just referred to. All of this is to be removed by burrs or rasps. It is so far forward and around a corner, so to speak, that it is not open to intranasal inspection. For this reason it is unwise to remove this dense bone without observing every movement of the instrument through an opening from above. The part is accessible only to rasps and burr drills, particularly those with curved shanks.

X-ray: An antero-posterior and a lateral view should be taken prior to operation. Although of some value in aiding diagnosis, the chief object is to outline the sinus. The front view gives the height and breadth and the lateral view shows the distance between the base of the nose and the crista galli. X-ray portrayal is of considerable importance.

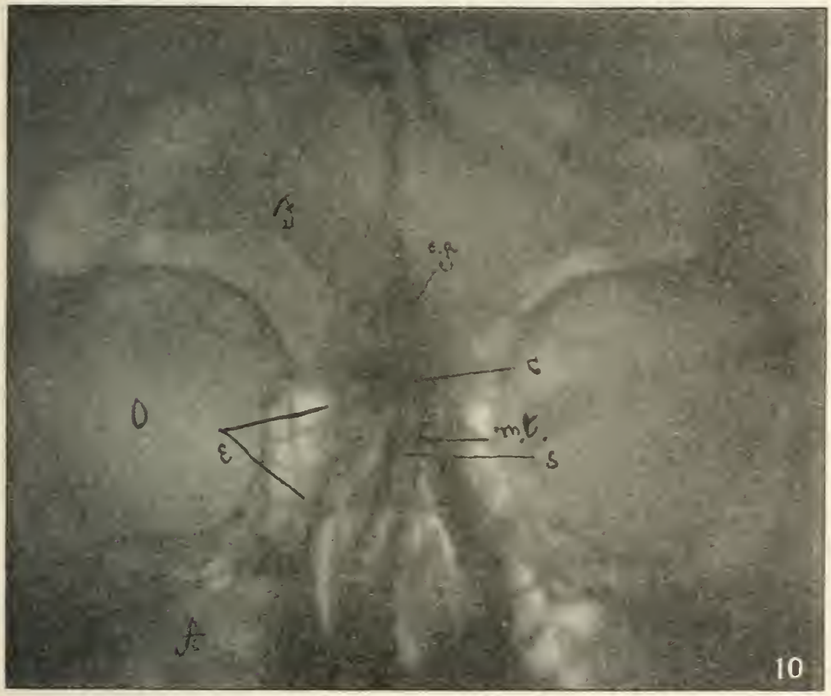

Figure 10. Anteroposterior roentgenogram showing the height and lateral extent of the sinuses: O, orbits between the inner boundaries of which is the nasal floor of the sinuses, all of which is to be removed; cg, crista galli; C, level of cribriform plate; s, nasal septum, mt, middle turbinate; E, ethmoid cells; A, antrum.

Transillumination is of minor importance and adds but little information.

Technic of operation: As previously mentioned, the anterior end of the middle turbinate and adjacent ethmoid cells have already been removed with the hope of obtaining a cure and, on failure of this, the following operation is advised:

A solution of cocain (4 per cent) in adrenalin (1 to 6000) is applied on a pledget of cotton to the upper anterior portion of the nasal cavity just before administering a general anesthetic and this is not removed until the beginning of the operation. Ether is the choice of anesthetic, started in the usual way but continued during the operation through a curved, metal tube reaching to the pharynx, so as not to interfere with the operator.

Patient in a semi-upright position. Eyebrow not shaven. Posterior nares plugged from the pharynx, thus avoiding hemorrhage posteriorly. This is preferable to introducing tampons through the anterior nares.

An incision is made in the eyebrow down to the bone starting just internal to the supra-orbital foramen, which can be felt, and running median in the brow for about one inch. The supra-orbital nerve should not be divided. Elevate periosteum and remove an oval piece of bone, entering the sinus with small chisels, exploring with a probe, and then enlarging the opening with bone forceps so that it is about three-fourths of an inch long horizontally. The inner end of the opening is in the facial wall, a little external to the front angle of the sinus. The orbital soft parts or any bone below the orbital margin are not to be disturbed. The sinus is then cleared of pus, granulations or polyps. Pass a probe through the ostium frontale, situated near the posterior angle of the sinus, down into the nose and leave it in position until the cell structure around it has been broken with small curettes passed down from above and an appreciable enlargement made into the nose. One of the smaller curved rasps, devised by Dr. O. A. Lothrop, may be passed into the nose and the tip made to appear in the sinus and by careful motions, keeping the tip constantly in view, the enlargement is continued, in a general way forward from the ostium, from time to time cutting laterally on both sides. On no account is any bone to be removed posterior or internal to the ostium, for obvious reasons. Presently, larger rasps and the burr drills are introduced from below and can be used at the discretion of the operator. Most of the work is accomplished with the burrs, just as a dentist reams out the cavity of a tooth, the burr always in sight through the external opening. The opposite sinus is opened either by carefully pushing a pointed instrument through the interfrontal septum or by burring away the lower front corner of this septum. The object is to remove the dense bone at the base of the nose in front and laterally, nearly down to the periosteum, as shown in the cuts. This bony mass is made up of the thickened upper ends of the nasal bones and nasal processes of the maxilla and the adjacent portions of the interfrontal septum and the middle plate of the ethmoid. With the large burr a considerable part of the ethmoid plate, situated just below the sinus, is removed but not extending quite to the upper border of the triangular cartilage. Remove all the interfrontal septum and any septa that partially subdivide the sinuses. Break through a frontal bulla if one is present. After the median partition has been burred through, it will be of advantage to work through both nostrils, using care not to injure the mucous membrane of the septum when introducing or removing the instruments. The excavation is complete only when all the bone in this region has been made thin, as shown in the cuts. A finger placed externally over the lachrymal bones will serve as a good guide against their injury while using the burr. Finally, according to the indications, as much of the ethmoid mass may be removed as is deemed wise, using burrs and curettes. The antrum may, likewise, be opened into the nose, as is sometimes indicated. The burrs used are those devised by Tilley and Ballenger for antrum work, those possessing the curved shank being most serviceable. Hemorrhage ceases long before the excavation is completed. Either sinus is then readily accessible from either nostril. At the end, note that the sinus wall is clean and smooth. Curette deeper for granulations and polyps but do not denude healthy bone of its periosteum. Do not disturb mucous membrane which is simply inflamed. The duration of the average operation should not be more than one hour.

The external wound is to be closed at once and no drain left in the nose. Apply a sterile gauze dressing for the first twenty-four hours, then a simple cocoon. Do not irrigate the sinus or nose until several days after the operation, for the parts will drain themselves. No hemorrhage has followed our operations. It is wise to keep the patient in bed from one to a few days, according to circumstances. Until the injured parts are healed there is a certain amount of exudate, which is rarely troublesome and which soon becomes insignificant. The scar of incision is in the eyebrow and should be scarcely perceptible and the bony opening is too narrow to allow depression.

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THE RELATION OF OBSTRUCTION OF THE EUSTACHIAN TUBE TO LOCAL AND SYSTEMIC CONDITIONS AND TO PROGNOSIS REGARDING RESTORATION OF HEARING.

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This study is based on the observation of ninety cases selected because of the prominence among their symptoms of obstruction of the Eustachian tube.

Obstruction of the Eustachian tube may be *temporary,* due to boggy swelling or inflammation; or *permanent,* due to formation of scar tissue with contraction. The causes of the obstruction are swelling of the mucous membrane (congestion or inflammation), the pressure of hypertrophied lymphoid tissue around the tube, hyperplasia (fibrosis) and the formation of scar tissue in the healing of ulcerations.

The location of the obstruction may be at the *Eustachian fossa* (lymphoid tissue, granulation tissue, papilloma, edema), at the *mouth of the tube* (fibrosis, scar tissue), in the *course of the tube* (valve-like webs or pockets), or at the *isthmus* (contraction by scar tissue).

The obstruction may be a sequel of vasomotor paresis (acidosis), ulceration, chronic infection or irritation (tonsils or teeth).

It may be relieved, *at the fossa,* by curettage; *at the mouth,* by incision with the salpingotome and dilatation by bougies; in the *course of the tube* and at the *isthmus,* by electrolysis and the use of bougies.

I have been prompted to write on this subject because of the large number of patients who come for treatment and state that they have been told that they are beyond help when, as a matter of fact, they can be helped.

However, conclusions regarding Eustachian tube obstruction cannot be drawn from brief observation of cases. They must be the fruit of a thorough knowledge of each case and this applies especially to prognosis.

Of the 90 cases presenting marked Eustachian obstruction, 33 of them may be classed as acute and 57 as chronic. Of the acute cases 21 were males and 12 were females. Of the chronic cases 27 were males and 30 females.

The ages ranged in the acute cases from 7 to 52 years; in the chronic cases from 10 to 80 years.

In 3 of the 33 acute cases no cause for the obstruction could be ascertained (9 1-11 per cent). The other 30 cases had some relation to other local conditions and the general health through association with, or as sequellae of, various conditions.

As direct exciting causes the following are given in the 33 cases:

	Cases	Percent
"Colds" (infection and toxemia) with purulent epipharyngitis	6	18 2/11
Grippe with purulent epipharyngitis	13	39 1/3
Sea and plunge bathing	4	12 4/33
Otitis media purulenta acuta	4	12 4/33
Otitis media catarrhalis acuta	1	3 1/33
Tonsillitis (acute)	1	3 1/33
Gout	1	3 1/33
Focal infection in teeth	1	3 1/33
Ingestion of quinin	1	3 1/33

Analyzing these cases still further, they may be classified as follows:

	Cases	Percent
Without discoverable cause	3	9 1/11
"Colds" (toxemia) with purulent epipharyngitis alone	4	12 4/33
"Colds" with Ot. Med. Pur. Ac. and mastoiditis	1	3 1/33
"Colds" with diseased tonsils	1	3 1/33
Grippe with purulent epipharyngitis alone	6	18 2/11
Grippe with Ot. Med. Pur. Ac.	2	6 2/33
Grippe with Ot. Med. Pur. Ac. and inflamed adenoids	1	3 1/33
Grippe with Ot. Med. Pur. Ac. and focal infection in teeth	1	3 1/33
Grippe with diseased tonsils	1	3 1/33
Grippe with diseased tonsils and focal infection in teeth	1	3 1/33
Grippe with inflamed adenoids and impacted wisdom tooth	1	3 1/33
Sea bathing alone	1	3 1/33
Sea bathing causing labyrinthitis	1	3 1/33
Sea bathing with deviated septum	1	3 1/33
Sea bathing with Ot. Med. Pur. Ac.	1	3 1/33
Ot. Med. Pur. Ac. alone	2	6 2/33
Ot. Med. Pur. Ac. with diseased tonsils	1	3 1/33
Ot. Med. Pur. Ac. with syphilis	1	3 1/33
Ot. Med. Cat. Ac. alone	1	3 1/33
Diseased tonsils alone	1	3 1/33
Gout alone	1	3 1/33
Focal infection alone	1	3 1/33
Ingestion of quinin and diseased tonsil	1	3 1/33

There were present as predisposing causes:

	Cases	Percent
Deviated septum in	1	3 1/33
Diseased tonsils in	5	15 5/33
Diseased adenoids	2	6 2/33
Focal infection in teeth	2	6 2/33
Impacted wisdom tooth	1	3 1/33
Syphilis	1	3 1/33
Gout	1	3 1/33

It will be noted that but one acute case was associated with obstruction of the corresponding naris by a deviated septum. Formerly a larger percentage of the cases would have been laid at the door of nasal obstruction; but since we have learned to look for other causes the cases listed as due to obstruction of the nares have lessened in number.

The abnormal conditions of the teeth listed as predisposing causes among the acute cases were alveolar abscess (focal infection), pyorrhea, impacted wisdom tooth. As to symptomatology, the chief complaint, in these acute cases, as given by the patient, was as follows:

	Cases
"Cold in the ears"	4
"Grippe in the ears"	1
Stuffiness of the ears alone	4
Stuffiness and deafness	1
Deafness and stuffiness	2
Stuffiness and tinnitus	1
Stuffiness and soreness of the ears	1
Stuffiness, deafness and pus from naso-pharynx	1
Pain in the ear alone	1
Pain in the ear and discharge	1
Pain in the ear and irritable throat	1
Pain in the ear and heaviness of ear	1
Pain in the ear, deafness and autophony	1
Pain in the ear and tonsillitis	1
Pain in the ear, stuffiness and heavy, dead feeling	1
Pain behind ear, discharge and deafness	1
Discharge from ear, pain and deafness	1
Deafness and autophony	1
Deafness and tinnitus	1
Autophony and discharge	1
Tonsillitis	1
Throat and ear trouble and stiffness of neck	1
Dizziness, deafness, pressure and pain	1
Nausea, headache and vomiting	1

When Eustachian tube obstruction, due to swelling of the mucous membrane, is present, the common cold will be recovered from sooner, the incident head distress lessened and the hearing conserved by treating the Eustachian tubes locally in each case.

In cases of Eustachian obstruction accompanying influenza, ulceration of the lining of the tube often takes place. This, if untreated, results in contraction of the lumen of the tube by cicatricial tissue during the healing process. A large number of the chronic cases are to be referred to this cause.

In these cases with ulceration of the tube the cotton on the Eustachian applicator is blood stained by passage over the ulcerated areas, on its way through the tube to the middle ear. The applicator also often finds pockets in the wall of the tube, or valve-like webs of membrane.

The presence of adenoids in the nasopharynx determines an increase in and swelling of the lymphoid tissue surrounding the proximal end of the Eustachian tube with consequent closure of the tubal opening. Inflamed adenoids are found in patients as old as 66 to 75 years. Since the employment of the nasopharyngoscope as a routine measure in the examination of each patient coming to us, the fact has been forced upon our attention that a large percentage (perhaps 50 per cent) of adults have the remains of adenoids in their nasopharynges which in many cases swell and harbor infection whenever an attack of "cold" or influenza supervenes.

In the Transactions of the American Laryngological Association for June, 1915, Dr. Jas. E. Logan, of Kansas City, is quoted as declaring: "Nothing has been said of one source of focal infection which, to my mind, is very important—the vault of the pharynx."

This remark applies also to hypertrophied or diseased tonsils. In fact, all parts of Waldeyer's ring are intimately related, because of likeness of structure, and intimately associated by means of direct links of lymphoid tissue, so that any pathological condition will influence similar tissue around the fossa of the Eustachian tubes and the inner surface of the tube itself to the isthmus. Directly by continuity of tissue, and through lymph and blood vessels, as well as reflexly through nerves, pathological conditions of the teeth and jaws will tend to affect the Eustachian tubes. In every case of acute or chronic Eustachian catarrh, recent developments show the necessity of investigating the condition of the teeth. In this series of acute cases 12 4-33 per cent were associated with diseases of the teeth; while another 15 5-33 per cent were associated with diseased tonsils. This, therefore, constitutes 27 3-11 per cent or more than one-fourth of all the cases. It must be acknowledged that this is a fair proportion.

If there be doubt in any mind as to the causative relation between disease of the tonsil and pathological conditions in neighboring organs and tissues, I would call attention to a case of meningitis following tonsillitis reported by E. Siemerling.[1] The patient was a boy of 15 and the meningitis developed in connection with a febrile sore throat. The meningitis was evidently serous, for recovery followed after two months of treatment. If a serous meningitis can be thus set up by diseased tonsils through the lymph or blood current, or both, it is certainly not far-fetched to believe that the condition of the Eustachian tubes can be and is deeply affected by the condition of the tonsils.

Cases in which diseased teeth, alveolar sockets or impacted wisdom tooth buds are found will present reddened anterior faucial pillars, thus tending to show that irritation or infection by way of lymphatics and blood vessels, or by continuity of tissue travels toward the Eustachian tubes. In the Transactions of the American Laryngological Association, June, 1915, Dr. Otto Freer, of Chicago is quoted as saying: "The lymphatics usually tell the story of focal infection." In one case of the writer's, after tonsillectomy, the patient, after many examinations, radiographs of the jaws (which revealed seven tooth sockets diseased by pyorrhea) and repeated visits to the dentist, was found to have an abscess of the lower right wisdom tooth socket which had existed long enough to absorb one of the roots of the tooth in its entirety, and that without any local pain. Later another abscess developed in a left lower molar. The pain had been neuralgic in character, distributed over the areas supplied by the terminal filaments of the fifth cranial nerve over the scalp.

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[1] Deutsche mediz. Woch., Nov. 20, XXXIX., No. 47, pp. 2281-2328.

The tooth conditions to be sought for are impacted wisdom tooth buds, slowly erupting wisdom teeth, abscess of tooth sockets, pressure by tooth roots on the inferior maxillary nerve in its canal in the mandible, pyorrhea with absorption of alveolar edge, malposed teeth, tooth in antrum.

The Eustachian tube involvement accompanying mastoiditis is but a part of the condition which causes the involvement of the mastoid bone.

General conditions, such as gout and syphilis, general infection from a focal point, or drugs such as quinin or the salicylates are liable to affect the Eustachian tubes, as they affect other parts of the auditory apparatus.

As an example of the manner in which diseased teeth will cause local and general infection and affect both the Eustachian tube and distant organs, thus obscuring the diagnosis and making of a prognosis difficult, the following case is described:

Mrs. C. B. S., referred by a colleague, March 27, 1914; age 36. Decidedly cachectic in appearance and very feeble. The patient states that she has a sensitive large intestine, especially the transverse colon. For four weeks the patient was in bed with nausea, not preceded by headache. The headache followed the nausea. A gall-bladder operation had been considered. More recently she had vomiting, not projectile in character. The patient came for examination to determine whether the cause of the nausea and vomiting lay perhaps in the ears or eyes. In December, after motoring in a strong wind, the patient had pain in the left ear. This persisted for two weeks. She also reports having pain in the left eye when driving in the wind. The patient had scarlet fever when 6 years of age and typhoid fever when about 15 years of age.

Examination—Revolving test to the right shows prompt nystagmus of 20 seconds' duration; to the left, 30 seconds' duration. The test develops pronounced vertigo.

The left Eustachian tube is decidedly occluded and does not admit either an Eustachian applicator or sound. The left drum is normal in appearance. The right Eustachian tube is patulous. The right drum shows congestion along the handle of the malleus.

The external auditory canals are tender and easily irritated by the speculum. Pressure of the speculum in the right canal causes a red color reflex in the right eye.

A much diseased wisdom tooth is found in both right and left mandibles.

The patient has been having pain in the region of the left ear anterior to the external auditory canal. She hears all the tuning forks including the Dench. *Weber* equal. *Rinne* positive. *Schwabach* (C^1-256 d. v.) right ear: bone conduction, 8 seconds; air conduction, 13 seconds. Left ear: bone conduction, 5 seconds; air conduction, 17 seconds. With C^2-512 d. v., right ear: bone conduction, 12 seconds; air conduction, 25 seconds. Left ear: bone conduction, 10 seconds; air conduction, 17 seconds. Both air and bone conduction shortened. Whole gamut of Galton whistle appreciated. Hearing by acoumeter and loud watch normal.

Treatment of this case continued from March 27 to April 25. On March 30 the patient reported that the one treatment on March 27 had afforded her much relief. This treatment had consisted of opening and medicating the tubes. On March 30 the left Eustachian fossa was curetted and this curettement was repeated on April 4. Electrolysis was used in the left tube on April 10. Each of these procedures was followed by bougieing of the tube.

On April 7 the left lower wisdom tooth was extracted and the oral surgeon found the alveolus diseased. As late as September spicules of bone were still coming away from the socket.

The patient was discharged as cured the latter part of April.

At the patient's first visit the eyes had been refracted under hematropin. The fundi were normal under ophthalmoscopy. Retinoscopy gave: O.D. plus .50 spherical; O.S. plus 1.50 spherical, total error. Prescribed O.D. plus .50 spherical; O.S. plus 1.00 spherical. There was no muscular imbalance.

On September 10, the patient's husband reported that there had been no trouble since April, all nausea having disappeared at the latter time. His wife had gained ten pounds in weight which brought her weight up to the normal figure of 130 pounds.

Here is a case in which a diseased mandible had caused locally disease of the corresponding Eustachian tube with the resulting symptoms, and with further pressure effect on the labyrinth. The effect on the health consisted in a general infection affecting especially the gall bladder. Such symptoms as had appeared had called attention to the abdominal organs until her physician had, by process of elimination, reduced the areas to be investigated down to the eyes and ears. The point in this case is that if the lady had not been advised to have an examination of her ears, an operation on the gall bladder would have been performed, especially as the radiographic plate showed apparent disease in that location. The gall bladder had been infected from the teeth as the focal infection.

In one acute case, G. B., age 16, at the first examination September 30, 1913, the turning test showed very tardy and short lived nystagmus. On October 9, after treatment had opened the tube, the turning test elicited prompt response of normal duration. In such a case, no doubt, the closure of the Eustachian tube brings about such a change in air pressure as to affect the labyrinth. If one has the temerity to make a prognosis from the first examination he will find that proper treatment will soon render the prognosis invalid. Closure of the Eustachian tubes magnifies the symptoms resulting from pathological conditions in the middle ear. Hearing tests are much dependent on the condition of the tubes. The ratio between bone and air conduction can be profoundly affected by Eustachian obstruction. Opening of the tubes changes this ratio toward normal.

It is hardly likely that Eustachian tubes will remain permanently normal when diseased tonsils remain in their neighborhood. In spite of the claim that tonsils have been enucleated wholesale without due reason, the writer believes that many septic tonsils, which ought to be removed, are still left in situ. Some patients reject tonsillectomy because they have read the writings of those who oppose even a reasonable percentage of tonsillectomies.

Study of these acute cases shows that there are some cases of simple closure of the Eustachian tube which may be easily relieved by treatment with the Eustachian catheter, applicator and bougie; that an attack of influenza or ordinary "cold" determines secondary tubitis and otitis media when the surrounding tissues are pathological, as, for instance, when there are diseased teeth, tonsils or adenoids; that patients who return with exacerbations of tubal obstruction are apt to have diseased teeth, tonsils or adenoids; that when a case of otitis media with obstruction of the Eustachian tubes presents itself it is not enough to prescribe hot ear douches, or these with nasal douches, but the Eustachian tube must be opened to furnish drainage, and the cause of the condition present should be sought in infection from the nose, adenoids, tonsils or teeth.

In some of the cases considered in this series acute boggy closure of the Eustachian tubes appears, on analysis, to be non-infectious, and merely a local manifestation of an acidosis or gouty condition. These patients present sometimes a rhinorrhea. Patients have come to the writer who had been treated locally in the nose and throat two or three times a week for long periods of time, when, by a process of elimination, the real cause was found to be an acidosis, demanding general internal and dietetic treatment.

Swimming and diving in plunges containing infectious water, or the water of which forces infectious material into the tubes, is at the bottom of a fair percentage of these cases, some even showing irritation of the labyrinth.

Regarding results of treatment in this series of 33 acute cases careful search for the real cause and careful treatment brought about a cure in all of them.

Of the fifty-seven chronic cases, two were cases of simple obstruction of the Eustachian tube without discoverable complication (3½ per cent).

In 24 there was chronic catarrhal otitis media, including the dry or hyperplastic variety (42 1-9 per cent).

In 14 there was deviation of the nasal septum, one of these cases showing complete closure of the right naris by old fibrous tissue adhesions, the result of former treatment, probably cauterization (24½ per cent).

Ten were secondary to abnormal conditions of the tonsils (17½ per cent).

Six cases were regarded as due to intestinal toxemia (10½ per cent).

Five were secondary to abnormal conditions of the teeth (8 4-5 per cent).

Five had inflamed adenoids (8 4-5 per cent).

Four had labyrinthitis, one with the Menière symptom complex (7 1-57 per cent).

Four were regarded as due to gout (7 1-57 per cent).

Three had adhesions in the fossa of Rosenmueller (5 15-57 per cent).

Two had damaged labyrinths due to injury—powder explosion and kick of horse—(3½ per cent).

Two had taken large doses of quinin (3½ per cent).

Two had mastoiditis (3½ per cent).

One had chronic nasal sinusitis (1 4-5 per cent).

In one case the condition was traced to swimming in plunges (1 4-5 per cent).

The cases associated with diseased teeth or tonsils in this list amount to 26 3-10 per cent. Add to this the 24¼ per cent furnished by the acute cases and the total is 50½ per cent, or more than one-half of the cases. Adding the 15 per cent due to adenoids the grand total from these three conditions is 65 per cent. This simply argues for a lowering of resistance in the Eustachian tube by constant infection or irritation from those neighboring organs, the pharyngeal tonsils, the teeth and Luschka's tonsil.

As to the predisposing causes presented by these chronic cases: Fourteen were associated with nasal obstruction by deviated septum. Ten were associated with diseased tonsils. Five were associated with abnormal conditions of the teeth, as ectopia, pyorrhea or impacted wisdom tooth buds. Five were associated with diseased adenoids. Four were associated with nasal obstruction by massive turbinate. Four cases were gouty. Two cases accompanied mastoiditis. One case accompanied nephritis. One case accompanied hereditary sclerosis. One case had atrophic rhinitis.

The abnormal conditions of the teeth which occurred in five cases included the following: One boy, aged 19, had the lower left wisdom tooth impacted against the neck of the second molar, two upper wisdom teeth erupting slowly, and the upper right canine tooth buried in the jaw, lying horizontally above the roots of the two bicuspids, its cusp pointing forward. One woman, aged 35, had never erupted any wisdom teeth. In one man, aged 26, radiographs showed his lower right bicuspid impacted below the incisors and lying lingually to their roots. In addition his left lateral upper incisor was painful, the right submaxillary ganglion tender, the upper left second molar had been giving trouble and there was tenderness at the left infra-orbital foramen. One woman, aged 75, had chronic pyorrhea. One woman, aged 23, had four slowly erupting wisdom teeth. The two lower were in good position, the two upper erupting labially.

As exciting causes in the chronic list should be given: Toxemia, probably intestinal, 6 cases; influenza, 6 cases; sinusitis, 1 case; chronic focal infection, 1 case; attenuated syphilis (probably), 3 cases.

Twenty-four cases presented those symptoms which lead to a diagnosis of chronic catarrhal otitis media, either the moist variety or the dry hyperplastic form which is, however, not catarrhal according to the true sense of the term catarrh.

General symptoms in the chronic cases were as follows: One case presented vertigo, deafness and mental confusion. This indicated a neurotic base. One other case appeared to be purely neurotic. One case had subjective deafness from inattention. Her hearing was fair under tests. One case had syncopal attacks which were relieved by restoring the tubes to a normal condition. Four cases presented labyrinthitis. In one of these cases there were characteristic attacks of the Menière syndrome, resulting in typical neurasthenia. This patient had consulted a gastro-enterologist believing that the symptoms pointed to the stomach, intestines or liver as the chief seat of trouble. Symptoms of neurosis or neurasthenia are complicated and magnified by Eustachian obstruction. Another labyrinth case, in which the chief complaint was tinnitus proved secondary to focal infection from puerperal septicema.

The chief complaint as given by the patients was as follows:

	Cases
Deafness	15
Deafness and tinnitus	9
Deafness and stuffiness	2
Deafness, stuffiness and purulent discharge	1
Stuffiness of ears	7
Stuffiness and earache	1
Stuffiness and deafness	1
Stuffiness, deafness and tinnitus	1
Stuffiness and hyperesthesia of the tubes	1
Stuffiness, deafness, vertigo, mental confusion	1
Tinnitus (becoming insane)	6
Tinnitus and deafness	2
Tinnitus and apoplectiform attacks of labyrinthitis	1
Tinnitus and autophony	1
Tinnitus and syncopal attacks with spasm of tensor tympani	1
Tinnitus and vertigo	1
Pain and stuffiness	1
Throat colds	1
Purulent discharge	1
Nasal obstruction and stuffiness of ears	1

As an example of the effect of slowly erupting wisdom teeth on the Eustachian tubes and hearing, the following case is reported: Mrs. A. E. M., age 23, June 10, 1914. Chief complaint is deafness. The patient had pulsating tinnitus which has ceased. For two years there has been gradual loss of hearing. The patient says "colds" settle in her ears. Examination shows no rhinitis now. Her mother has been hard of hearing for 10 to 12 years; a sister, 37 years of age, has been hard of hearing for 6 or 7 years. The patient had typhoid malaria at the age of 4 years. Pertussis in childhood. Eruption of her wisdom teeth began two years ago. It is to be noted that failure of hearing began two years ago also.

Examination: Drums are gray and slightly retracted, but vibrate well with the otoscope. *Weber* is localized to the right. *Rinne*, positive on the right and the left for C^4 and C^3; negative for other forks. *Dench* fork not heard. *Schwabach* with C^2; right, bone conduction, 21 seconds; air conduction, 8 seconds; left, bone conduction, 13 seconds; air conduction, 10 seconds. *Accoumeter*: right, 10 feet; left, 17 feet. *Watch,* right, 2½ feet; left, 3 feet. *Turning test* gave: to right, nystagmus of brief duration; to left, of longer duration, but not up to normal. The patient has four wisdom teeth erupting. Both Eustachian tubes closed with boggy swelling, the right less so than the left.

Diagnosis: Deafness due to boggy closure of Eustachian tubes. No good evidence of a true otitis media. Catarrhalis chronica. Amenable to improvement.

In this case there was, no doubt, an hereditary tendency to ear involvement. No symptoms of otosclerosis.

After ten days' treatment the hearing was better and both Eustachian tubes took a No. 5 bougie easily. By July 11, eruption of the wisdom teeth had progresed, the upper right being farthest advanced, the lower right next, the lower left next, the upper left least. The Eustachian tubes were easily inflated and a bougie could be introduced readily. Treatment was continued until both tubes were patulous and the Eustachian applicator could be introduced for the full length.

December 12, 1915, the patient reported good hearing, the wisdom teeth having completely erupted; the two lower were in good position; the uppers pointed labially. No tinnitus. Colds do not settle in the ears. Radiograms of the jaws and extraction of wisdom teeth had been urged but the patient preferred to wait for the eruption of the teeth. Persistent treatment brought about steady improvement of the Eustachian tubes. Complete recovery followed the completion of eruption of the wisdom teeth. Extraction of the latter would have brought about more speedy relief.

As an example of a case in which a very poor prognosis might have been made without any qualms of conscience, but in which treatment brought about desirable results, the following is described: F. C. H., age 31, referred May 28, 1914. The patient was in tears because practically absolute loss of hearing for conversation was threatening to cost him his position. In May, 1913, while in Seattle, his ears felt stuffy, the hearing changed and there was much vertigo. These symptoms would perhaps indicate an attack of right serous labyrinthitis, but there is temptation or tendency to sometimes take too much for granted. A patient reports a sudden or an acute attack characterized by vertigo and deafness. We diagnose damage to the labyrinth, thinking perhaps there is no probability of cure, when careful examination will show the attack to be due to occlusion of the Eustachian tubes, relief of which will assure the patient useful hearing. For the last year the patient could not hear, for instance, a neighbor's piano, which his wife could hear easily. He had mercurial treatment when a youngster. Wassermann test proved negative.

Examination: Drums retracted, gray, lack of light reflex; vibrate with Siegel otoscope. Appearances do not suggest otosclerosis. Tonsils moderately enlarged. Nasopharynx moist; right Eustachian fossa shows enlarged veins when examined with the nasopharyngoscope. The left tube inflates with strident sound; right one with softer soufle. Both narrow at the isthmus. The left tube takes Nos. 3, 4 and 5 sounds to the isthmus; the right No. 3 only.

Weber to left with C and C^1, equal with other forks. *Rinne* positive to right ear; negative to the left. *Schwabach* with C^1, right ear; bone conduction, 5 seconds; air conduction, 7 seconds; left ear, bone conduction, 5 seconds; air conduction, 4 seconds; C^2 fork is heard by both right and left ears by bone and air conduction; C^3 by air conduction only; right and left, C^4, ditto; C^5, ditto. *Dench* fork is heard by both ears by air conduction. *Galton whistle* heard from 3 to 12 at short distance. *Accoumeter,* right ear, bone conduction only; left ear, 21 inches. *Watch,* negative on both sides. *Turning test,* to right, prompt, but brief, nystagmus; to left, no nystagmus; slight dizziness. *Whispered voice* not heard; *conversational voice,* less than a foot, right and left ears.

June 22. The patient reports better hearing for last two days, except early in the morning. Both tubes take bougies Nos. 3, 4 and 5 as far as the isthmus. C^4 fork heard by air conduction and by bone conduction; C^5 fork by air conduction and by bone conduction, right ear; air conduction only, left ear. The patient hears the whistle from 1 down.

June 23, hears 512 vibrations by air conduction and teeth; 2,048 vibrations by air conduction, teeth and skull. *Accoumeter,* right, ½ inch; left 4 inches. *Watch,* contact left ear. The patient thinks that the pressure of the otoscope in the canal of the right ear causes a feeling of coolness in the right eye. This sensation called attention to the fifth nerve. Radiogram of the jaws shows no impacted wisdom tooth buds.

June 25. The patient reports periods of better hearing and inflation on swallowing. Electrolysis to right tube and isthmus today. June 26. Reports clear hearing last night at 6:30, and yesterday afternoon he was able to hear the voice of a friend who was talking over the 'phone. Electrolysis to left tube to-day. Right tube inflates readily and takes bougies easily. High frequency current to both ears.

June 29. Broke adhesion in the right fossa of Rosemmueller.

July 2. Acoumeter at 4 inches, right ear; 6 inches, left ear.

July 4. C, 128 and 256, positive by both air conduction and bone conduction, both ears; 512 and 1024, by air conduction and teeth; 2048 by air conduction and bone conduction, right and left. Dench, positive, right and left. Whistle heard the whole gamut by right and left. Heard wife's voice at 10 feet; another person's voice at 8 feet.

At this time the patient was obliged to return to his home in Canada. On January 16, he wrote: "I am mighty glad to be able to say that my hearing is considerably improved over what it was on my return. For about three weeks after my return it was not at all good; then a change for the better set in. During September and October, it was at its best. There are periods when I hear extremely well and other periods when I do not hear so well. However. I am vastly improved over the time when treatment was undertaken."

On May 22, 1915, this patient returned for further treatment. Examination showed the nares normal; tonsils mushy (septic); right Eustachian tube patulous; right drum vibrates with the Siegel otoscope and has better color than when seen last (is slightly opaque): left Eustachian tube inflates but takes neither applicator nor bougies.

This course of treatment consisted of electrolysis to both tubes, each twice, dilatation with bougies at each visit, and tonsillectomy. Rapid improvement followed these procedures, so that at the time of the patient's departure for the North he heard the conversational voice at 24 feet, and the whispered voice at 8 feet..

Examination of this patient by a colleague in San Francisco, late in June, showed improvement in the right ear of nine to one. in the left ear twelve to eight over the condition existing in May when the patient was on his way South. July 17, 1915, the man wrote: "Invariably it is commented that there is a change for the better. I was delighted over a week ago, because, for the first time I heard the postoffice clock strike, about a block away from the office, where our heaviest traffic is. . . . On another occasion, while typewriting, with my mind thus occupied, one of our men came in, speaking the moment he opened the door, and to his astonishment, I answered his question. The distance is approximately 20 feet, this paralleling the occasion when I heard Miss T— speak from your desk."

This case is described in detail in order to lay stress on the fact that at the time of the first examination a poor prognosis would have been given, had I not refused to make one until becoming better acquainted with the situation. I believe the tonsillectomy was highly necessary in the case, in fact, it was probably indicated at the patient's first visit in 1914, but the tonsils at that time appeared innocuous, simply slightly hypertrophied (when the floor of the Eustachian fossa has dilated veins coursing over it the indication is to study the tonsils and teeth for sources of infection or irritation). That electrolysis opened the isthmi in this case accounts for much of the improvement. The writer employs electrolysis with Duel's set daily with increasingly gratifying results. The set is kept at hand connected with the battery, so it can be used as readily as are the sounds and bougies.

In spite of the fact that the tuning fork tests were not greatly modified in this case, the fact remains that the hearing was greatly improved for practical purposes, the patient retaining his position, where he is very useful to his employers. Syphilis had, no doubt, damaged the cochlea in childhood. However, opening the Eustachian tubes and removing sources of infection and irritation in their neighborhood enabled the man to make the best use of such function as remained to the cochlea.

As to the extremes to which irritation from the teeth can go: Dr. Jas. David McCoy, of this city, related to the writer the case of a young lady who suffered excruciating head pain, diagnosed as neuralgia. This increased progressively until the patient was pronounced insane and confined in a sanatorium. Fortunately, she fell into the hands of one who radiographed her jaws. Impacted wisdom teeth were found. Removal of these brought about a complete cure of the attacks of pain, and the mental condition which they produced.

The pain from impacted teeth is thus sometimes severe. At other times, instead of pain, there is the condition of trismus, a stiff feeling of the jaws with ache or pain anterior to the external auditory canal. In other cases the ache or pain is located in the ears or external auditory canals. In still others it is referred to the mastoid region. The writer in another paper* has described ear reflexes from diseased or malposed teeth as they had presented themselves to him during the course of some years in daily practice.

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*Laryngoscope, February, 1914.

Failure of ordinary routine treatment to relieve symptoms, by removing Eustachian obstruction, should lead to search for septic tonsils, diseased or malposed teeth, adenoids, or some abnormal systemic condition. The knowledge of a case has recently come to the writer in which an otologist treated a patient by inflation, for troublesome tinnitus, during the course of two years. At the end of this time another otologist discovered that the woman had a blood pressure so high that the sphygmomanometer could not register it all.

As to the results of treatment in this series of 90 cases. Records show a cure in all the acute cases. In nine of the fifty-seven chronic cases there is no record of complete relief having been obtained:

In one case the patient refused to have impacted teeth removed. One was tubercular and had low recuperative power. One gave good results in response to hearing tests, but claimed she could hear no better; this being due to lack of attention on her part. One case accompanying labyrinthitis did not persist in treatment. One case was no doubt true otosclerosis. Two cases had an acidosis, or diathesis, which brought about exacerbations of bogginess of tissues of the nasopharynx and tubes. In one case the deafness had existed since childhood and the other ear was damaged by the kick of a horse. In one case the condition was secondary to a labyrinthitis due to metastasis during puerperal infection. Three cases of the chronic series presented absolute closure of the mouth of the Eustachian tubes necessitating an incision through Yankauer's speculum, with Yankauer's salpingotome, using Holmes' nasopharyngoscope, curettage of the Eustachian fossa and gradual dilatation of the tubes by electrolysis and bougies. These cases, I take it, had resulted from ulceration, the resulting healing process closing the tube by scar tissue. In many instances the Eustachian applicator, when passed ever so carefully, comes out with the cotton stained with blood. This is to be interpreted as a state of rawness or ulceration within the depths of the tube. Eight of the chronic cases were curetted in the Eustachian fossa with Holmes' curettes, and in five electrolysis was used with Duel's bougies.

In each case of suspected Eustachian obstruction examination should include that with the nasopharyngoscope, Eustachian catheter, Eustachian applicator and Eustachian sounds.

Treatment of Eustachian obstruction calls for the use of the Eustachian catheter, applicator and bougies, and vaccines, as a routine, with the frequent addition of curettage of the fossa and electrolysis of the tube when ordinary treatment fails to give relief. Cases experiencing frequent exacerbation of closure of the tube need treatment by electrolysis for more permanent effect than is produced by the ordinary routine office treatment. The writer's rule is that in any case where the isthmus of the tube will not take the No. 2 Yankauer Eustachian bougie, electrolysis should be used.

Dilatation of the Eustachian tube with bougies is just as rational as the use of bougies in the urethra—and furthermore, the indication for such procedure is identical—contraction of a tube by fibrous tissue resulting from inflammation with ulceration and the subsequent healing process. In cases of collapse of the mouth of the tube it is found that incision with the salpingotome, curettage of the fossa, with subsequent frequent passage of the bougies produces good results. The writer believes that collapse of the mouth of the Eustachian tube is frequently due to the use of the Politzer method of inflation, especially when performed by the patient at home. The writer never employs the Politzer method, experience having convinced him that inflation with the Eustachian catheter is far more scientific and productive of far more satisfactory results, and never prescribes the use of Politzeration by the patient at home.

Closure of the mouth of the Eustachian tube by a firm ring of fibrous tissue is in many instances the sequel of ulceration with resultant healing and contraction, to be relieved by incision and bougieing.

The writer has come to believe since the introduction of Holmes' nasopharyngoscope, that formerly the Eustachian catheter was not in the mouth of the tube and that in consequence the middle ear was not properly inflated, when we thought it was. This simply means that any procedure is better performed in the light, under the eye, than in the dark by touch.

Given a series of cases of ordinary, or greater, degree of deafness, or associated with tinnitus, what does examination of these cases show as to the prognosis for the restoration of hearing? Can we make a prognosis of any degree of reliability in such cases without first treating the Eustachian tubes? Prognosis ought not to be made until the tubes are opened. Our hearing tests applied for the purpose of ascertaining the condition of the hearing apparatus proper, or internal ear, are much modified by closure of the Eustachian tubes. Cases come to us in which definite prognoses by good men have been made which were entirely at variance with the possibilities of relief or cure, as proved by the outcome of treatment. For instance, Mr. J. B. K., age 76, came for treatment January 10, 1914.

He had received his last treatment in New York in September for a condition which had developed in the preceding month. His complaint was loss of hearing. A diagnosis of chronic catarrhal otitis media had been made and a poor prognosis had been given, with the information that only occasional inflation was demanded. Examination showed the following: *Weber,* to the left. *Rinne,* positive. *Schwabach* with C^2, right, bone conduction, 23 seconds; air conduction, 33 seconds; left, bone conduction, 20 seconds; air conduction, 30 seconds; C^4, C^3, C^2, louder by air conduction; C^4, louder by bone conduction. Dench fork positive, right and left, more faintly to right. *Whistle,* whole gamut. *Acoumeter,* left, 6 feet; right, 12 feet plus. *Watch,* right, 6 inches; left, 48 inches. External canals are almost occluded by exostoses. Both Eustachian tubes are obstructed by boggy closure, taking No. 3 sound, however. Tinnitus had been a prominent symptom.

Treatment of the tubes comprised applications with Yankauer applicator, bougieing, electrolysis, inflation of middle ears, high frequency current until both tubes took No. 5 bougie and both isthmi took No. 3.

This patient is almost totally blind, so he was much disturbed at the prospect of losing his hearing. Because he was 75 years of age, it was not necessary to make a bad prognosis. It did not require a long course of treatment so that hearing of the conversational voice was brought up to the standard. March 29, 1915, a year later, the right ear was found to be losing bone conduction for C^4, C^3 and C^2 forks. These were transmitted to the left side. Weber was still to left. Hearing still highly serviceable.

The writer believes it possible to find the cause of Eustachian obstruction outside the ears in a large percentage of cases. Fallacious rules for guidance have prevailed in the past because the conditions discovered at the first examination were due to a combination of influences—Eustachian obstruction, infection by lymphatics or blood vessels, reflexes or infection from the teeth, tonsils or adenoids, or some abnormal systemic condition.

Before we pronounce any case incurably deaf it behooves us to search carefully for neighboring or general causes, and to put the Eustachian tubes in normal condition, because a remnant of hearing which is practically valuable for daily intercourse with one's fellow man can be nullified by closure of the Eustachian tube or by disease in neighboring organs. In some cases, although the existing deafness is originally due to Eustachian disease, opening the tubes does not improve the hearing because the condition has existed too long. In such cases we can improve the results of our tests and still the patient will not hear because he is subjectively deaf, or is incapable of giving due attention or interest. A certain percentage of cases of Eustachian obstruction are easily relieved. Eustachian obstruction proves rebellious to treatment because disease of neighboring structures such as the teeth, tonsils, or adenoids affects the tubes, either directly by continuity of tissue, or reflexly. The percentage of cases ultimately found not to be amenable to improvement will be small, provided we search carefully for the cause and remove it.

To tell a patient that he will need inflation of the tubes once a month or so for the rest of his life, and that such treatment will be beneficial, is to confess, in many instances, that one is unable to find the true cause of the trouble or to carry out a line of treatment that would bring about a cure or more immediate relief.

Fibrous narrowing of the Eustachian isthmi is the result of ulceration of the mucous membrane lining the tube, with resultant healing and contraction.

The writer's observation convinces him that many general practitioners undertake, through cupidity, to treat cases which ought to be referred to the specialist.

We cannot isolate our specialty. In all our work the patient's general condition must be kept in mind. The general practitioner cannot afford to forget that there are those who have given special study to their particular branches of medicine and surgery. A splendid example is the gastroenterologist who eliminates the conditions included under the head of his specialty and then refers his patient for examination of the eyes and ears in the search for the cause of vertigo, nausea, vomiting, headche, etc.

Is sufficient weight placed upon the general effects of Eustachian obstruction? One woman in this list of cases, who had suffered from tinnitus for 25 years became insane. Her age was 48. She was born in Russia and had been in this country 25 years. At one time before coming to this country she had a fall which fractured her left jaw, and, I believe, damaged her left labyrinth, for she had pronounced tinnitus the day following the fall. Her general health has always been good. Had been treated at Königsberg, had a mastoid operation 12 years ago in Boston; three years later, or nine years ago, had another mastoid operation. Had also been treated in many dispensaries and had been told that nothing more could be done for her.

Examination showed the drums to be retracted and transparent. The Eustachians to the isthmi were patulous, but the isthmi themselves were very narrow. There were adhesions across the left fossa of Rosenmueller. Weber to left. Schwabach with C^2 fork, right, air conduction, 8 seconds; bone conduction, 18 seconds; left, air conduction, 8 seconds; bone conduction, 12 seconds. Rinne, with 2048, air conduction greater than bone conduction, right and left (bone conduction reduced in left); with 1024, bone conduction greater than air conduction, right; air conduction greater in left; with 512, bone conduction greater than air conduction, right; air conduction greater in left; with 256, bone conduction positive; air conduction negative, right and left; with 128, bone conduction positive; air conduction negative, right and left.

This test shows the left ear to be slightly the better, and this is the ear in which the tinnitus was so annoying, and which was damaged by the fall.

Dench fork, negative, right and left. Whistle, right ear from 2 down; left, from 4½ down. Acoumeter, 2 inches, right and left. Blood pressure, 110.

The adhesions in Rosenmueller's fossa were broken with the finger. Both Eustachian isthmi were opened with electrolysis. After three days the tinnitus was absent almost half the day. It was better by day, worse by night.

This woman's only complaint was of tinnitus. Opening of the Eustachian tubes produced at least temporary improvement, even in this desperate case, but the woman was soon pronounced insane. This again shows to what extremity the constant hammering on nerves can bring a patient. I believe the woman was driven insane by head noises. I also believe that something could have been done to relieve her, even if that something went to the extreme of destroying the labyrinth.

In the diagnosis of these cases all aids were sought, including laboratory tests, radiograms, etc.

Suite 1120 Brockman Building.

BILATERAL POLYPOID HEMANGIOMA OF NASAL SEPTUM.*

DR. JAMES G. CALLISON, New York City.

Before presenting the patient, I wish to say just a word as to the nature of the hemangiomata. Brooks, in his "General Special Pathology," gives probably the clearest description. They are divided into two general classes, angioma cavernosum and simplex. Cavernous angioma consists of numerous large, intimately connected blood spaces which occupy the position of the capillaries and merge into wide, tortuous and frequently sacculated veins. The size and form of the spaces is very variable. They are lined with delicate endothelium, and consists of a basement structure composed of ordinary connective tissue. In this are sometimes found also elastic fibres and smooth muscle. The tumors are of greater or less density according to the amount of this tissue present.

Angioma simplex (teleangiectasis) consists of wide, partly newly-formed capillaries, the walls of which are altered. The arteries and veins also may be involved, though the alteration of the capillaries predominates. Ordinarily it does not appear in tumor form, but as a diffuse, flat growth. This is the ordinary "port-wine" birth mark. The two forms are both usually congenital, and merge into each other without any sharp dividing line, while the cavernous angioma merges into the so-called erectile tissue.

In addition to these forms of true angioma, text-books on nose and throat diseases speak of the "bleeding septal polyp," springing from Kiesselbach's area, just below the center of the triangular cartilage of the septum. In these the numerous blood vessels, lined with simple endothelium and showing no muscular coat and but little adventitia proper, are small and lie in a stroma of very lowly organized connective tissue containing large numbers of lecocytes, including many lymphocytes, endothelioid and plasma cells. These seem to be a type of abortive granulation tissue or varix.

The tumor in the patient I wish to present is, as the microscopical description below and the accompanying microphotographs demonstrate, more closely allied to the group of angioma cavernosum. This, in its turn, is only slightly removed from erectile tissue, into which it imperceptibly fades.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 24, 1916.

The patient, Mrs. S. P., Russian, married, is the mother of two children, 2½ and 4 years old respectively; no miscarriages. She was first seen at the clinic of the Manhattan Eye, Ear and Throat Hospital on May 6, 1916, complaining of crusting in her nose and severe frontal headache, unrelieved by glasses, from which she has suffered for the past five years or more. As she is a Russian Jewess and speaks little English the history was difficult to get and unreliable. On examination there was pus on the floor of the nose, in the middle meatus, and a slight flow of pus falling over the middle turbinate. That in the middle meatus was scant, dry and crusted. All the internal nasal structures presented the advanced grade of trophy characteristic of chronic sinus infection.

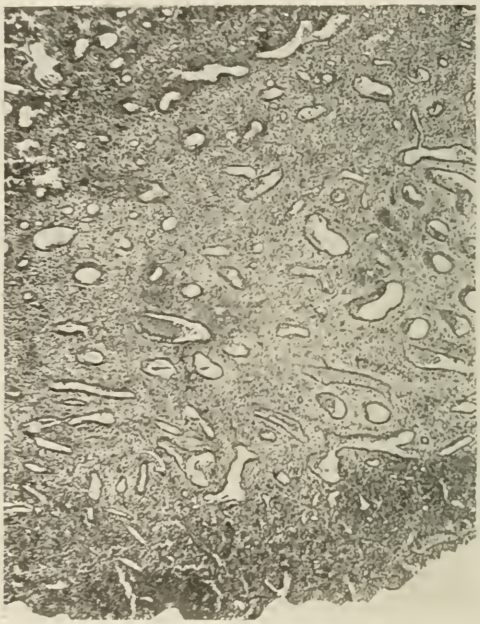

Figure 1. Longitudinal section of one of the polypoid excrescences showing numerous blood vessels, base of attachment and purulent infiltration near surface. Magnified 30 diameters.

On both sides of the septum, at the junction of the crest of the vomer and the triangular cartilage, were a number of excrescences ranging in size from a pea down. These were pedunculated, smooth, dark red in color and bled on the slightest touch. So far as these growths were concerned the history was negative.

Transillumination showed all the sinuses that could be reached free from shadows. The x-ray shows a thick membrane in the frontals and ethmoids, and granulations or pus in the left antrum. The Wassermann reaction was negative.

Some of the polypoid excrescences anteriorly on the right side were removed for microscopic examination with surprisingly little bleeding. Sections of this show a tissue containing large blood spaces with incompletely developed walls. These spaces are lined with a single layer of indefinite endothelium, and many of them have what appears to be smooth muscle and a poorly developed adventitia. In the central part of the nodes the intervascular space is filled with edematous areolar tissue with few cellular elements. Nearer the surface, where the epithelial covering is bathed with pus and there is a slow but continuous absorption of toxic material

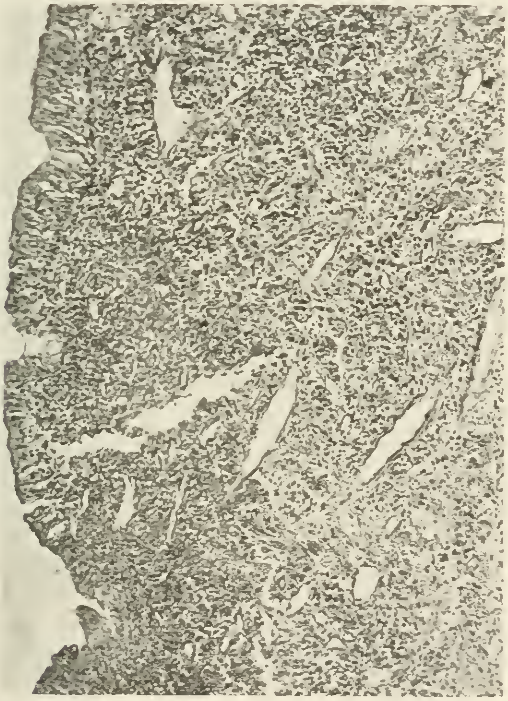

Figure 2. Same magnified 160 diameters.

there is a dense infiltration with leucocytes, among which are many lymphoid, endothelioid and plasma cells. This condition is so advanced in places that it approaches in appearance granulation tissue. The epithelium is everywhere intact, as is the basement membrane, although the latter is much thinned.

Diagnosis: Bilateral hemangioma of nasal septum, frontal sinusitis and ethmoiditis on the right, pan sinusitis on the left.

As to the treatment, the bilateral appearance of these polypoid growths is, in my opinion, evidence of their origin in the joint between the crest of the vomer and the triangular cartilage. To effect a cure it would seem to be necessary to obliterate this joint by a submucous resection. However, while caring for the surgically more important sinus infection, I shall probably try the cautery experimentally.

Before closing, I wish to answer one point of the discussion before it arises. That is as to the effect of the irritation of the sinus infection on the hemangioma. I believe that practically all hemangiomata are laid down during the embryological development of the body. There may be and probably is some further development during later life. They are essentially, however, congenital affairs. This view is strongly supported by the histological development of the present tumor. The central, norphologically older part of the polypoid mass is entirely free from evidence of irritation, and has blood spaces with some attempt at the formation of walls. Toward the surface, where chemical irritants may be absorbed, there is every evidence of secondary reaction.

206 East Seventeenth Street.

Importance of Bacillus Carriers in the Propagation of Diphtheria.

G. F. RUEDIGER, *Illinois Med. Jour.*, Oct., 1916.

The author concludes that bacillus carriers who have been recently exposed to diphtheria frequently transmit an infection to others which gives rise to clinical diphtheria although the carrier may never show any clinical symptoms of the disease. These temporary carriers are of greatest importance in keeping up an epidemic. Nose and throat cultures should be taken from every "contact" and all those who give a positive culture should be isolated.

P. F.

PRIMARY EPITHELIOMA OF THE FRONTAL SINUS. REPORT OF TWO CASES.*

Dr. D. S. Dougherty, New York City.

Malignant disease of the accessory sinuses is not of frequent occurrence, and when present is usually the result of an invading process of extrinsic origin. Owing to its situation and anatomical relations, the frontal sinus is even less apt to be the seat of new growths than are others. The following cases of primary epithelioma of the frontal sinus are therefore of especial interest and are particularly worthy of recording.

Case 1: P. S., male, age 48, born in Italy, was admitted to the City Hospital, February 6, 1914, with the following history: For about a year he had had severe frontal headaches, pain in the right eye, and photophobia. Two weeks prior to admission, he had been operated upon in the surgical service of a general hospital, but had obtained no relief. He still suffered from the headache and pain in the eye, and had occasional spells of dizziness. The operative wound in the forehead had never entirely healed.

Inspection showed a fairly well nourished man of good physique but poor mentality, understanding but little English; face drawn and anxious in expression, with some bulging of right eye. Above the right eye was a horizontal scar, starting just over the outer canthus of the eye and meeting in the median line, and a perpendicular one extending from the hair to the root of the nose. At this intervention, was a suppurative fistulous opening, and there was another one directly over the arch of the brow. The discharge, a thin, ichorous pus, had slightly excoriated the surrounding epithelium.

Physical Examination: Heart, lungs, and kidneys, negative. Eye ground, negative; pupils equal and prompt in reaction. No subjective symptoms other than the headache and pain.

It was found to be impossible to wash out the sinus through the openings, and on inserting a probe it seemed to meet some soft, resisting body.

On February 14, the sinus was opened under general anesthesia. In place of the usual incision, the lines of the old ones were followed, except that the perpendicular one was made much shorter. On retracting the flap, a small circular opening in the external plate was seen. This was enlarged and the wall was wholly removed. The cavity of the sinus was found to be filled with a dark, granulomatous mass which was removed with the curette and sent to the laboratory. The inferior and posterior walls were necrotic; the posterior being entirely eroded, with considerable exposure of the dura.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 24, 1916.

The necrosed bone was removed, the cavity carefully but thoroughly curetted, washed out, and packed with iodoform gauze. Open drainage was established, it being deemed unwise to occasion further trauma by draining intranasally.

There were no post-operative complications; the headache, pain, and vertigo disappeared, and the patient was about the ward for several weeks, apparently making an uneventful recovery, when without any preliminary symptoms, he became unconscious and died in twenty-four hours. There had been no temperature changes except post-operative and just before death.

Report of tissue removed at operation: Epithelioma. Scrapings from skin, negative.

Autopsy report: Purulent meningitis.

Case 2: A. S., male, age 50, Russian, was admitted to the hospital January 8, 1916. The patient gave a history of having suffered from headache and vertigo for several months, and having been operated upon three months previously for frontal sinusitis. Since the operation the headache and vertigo had continued, accompanied by severe pain over the right eye. Had also had a continuous discharge of pus from the wound.

Physical examination was practically negative; eyes, normal; temperature, 98.4; pulse, 96. The patient was well developed and seemingly not acutely ill.

Inspection of the operative area, showed a partially healed Killian incision with fistulous openings at the center and inner angle, copiously discharging a thick, foul-smelling pus. The edges of these were ulcerated and where the discharge had excoriated the fold of the upper eyelid was a small mass of granulations.

The ulcer on the upper lid was excised, and microscopic examination revealed epithelioma.

On February 14, under general anesthesia, the wound was reopened and the sinus was found to be filled with a partly disintegrated mass which extended into and filled the right frontal lobe. This was removed and the cavities were carefully curetted, cleaned with a weak permanganate solution, and loosely packed with iodoform gauze. The wound was left partly open. On February 16, the gauze was removed, and as some slight discharge remained, the wound was gently irrigated and a cigarette drain inserted.

The pathologist reported that the tissue removed at the time of operation was squamous celled epithelioma.

The patient was at no time confined to his bed, and complained of no discomfort. There was no impairment of the intellect, no dullness or apathy,—the only apparent unfavorable feature of the case being a rather rapid extension of the ulcerative process on the eyelid to the adjacent tissues.

About March 1, symptoms denoting possible extension into the anterior central convolution began to develop. It was first noticed that he had some difficulty in his walk and in the finer movements of his hands. Two days later, March 3, he was seized with a convulsion especially marked by severe spasmodic twitching of the left side. This was followed by total paralysis of that side and by coma lasting five hours. He then in some degree regained consciousness, noticing his surroundings and taking nourishment when offered, but unable to speak, write, or hear spoken words. The left paralysis continued, but the right side was not affected. This condition continued for three days, death occurring on March 7.

During the convulsive and comatose stages the temperature fluctuated in sharp curves from 97 to 102, the pulse rate ranging from 96 to 100.

The autopsy findings confirmed the operative and pathological;—Epithelioma of the frontal lobe with extension of the degenerative process. The ulceration was so extensive as to preclude exactness in location and prevent preservation of the specimen.

77 West Fiftieth Street.

Hay=Fever; Its Cause and Prevention. WM. SCHEPPEGRELL, *Jour. A. M. A.*, March 4, 1916.

The susceptibility of persons to the presence of cats, horses and other animals should be distinguished from true pollinosis. Many of these cases are psychic in character but when actual reaction takes place it is probably due to some skin emanations. The general results of treatment of hay-fever so far have not been satisfactory and the author is skeptical as to the value of pollantin and other vaccine and immunizing methods. P. F.

HEMIPLEGIA FOLLOWING TONSILLECTOMY.*

Dr. G. F. Gracey, Plainfield, N. J.

This case occurred in the New York Eye and Ear Infirmary in the service of Dr. Kenefick. The patient was a Polish boy, nineteen years of age, employed as a porter in the institution. Particular effort was made to elicit a history of epileptic seizures or convulsions in early life, but nothing was found in the previous history that had any bearing on the course of the case. For at least two months he had been complaining of indefinite pains, of sore throat, headache, and particularly of constipation, and had been treated by Dr. Dixon, receiving the same attention as the other hospial help while doing his usual work. He was never confined to bed, so that these symptoms, while they may be important, were not severe enough to give him any great inconvenience. They usually disappeared after a brisk cathartic. Finally, about February 1, he came to Dr. Dixon complaining of sore throat and hoarseness and was referred to the house surgeon for more extended examination. Examination of the nose and accessory sinuses was practically negative, but there was present a chronic granular pharyngitis, enlarged tonsils of the follicular type, crypts filled with cheesy exudate, and a subacute laryngitis. There was no lymphatic involvement and so far as ascertained, no acute process was present. The patient was placed on mild treatment for the throat, and it was recommended that the tonsils be removed at a later date, on the basis that they were the exciting factors. Permission was obtained from the superintendent, and the patient was admitted to the ward in Dr. Kenefick's service.

Urine examination was negative. Physical examination was negative except for an indefinite soft systolic murmur at the cardiac apex, not transmitted and not variable. There was apparently no contra-indication to operation. Temperature, 97; pulse, 80; respiration, 20.

On February 4, the tonsils were removed under gas-ether anesthesia, the dissection method being employed. The tonsils were large and adherent in places. The only incident during the operation was that at one time the patient came out from under the influence of the anesthetic and coughed considerably. This delayed the operation time slightly until he was well under again, and caused more, though not excessive, hemorrhage than ordinarily.

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*Read by invitation before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 24, 1916.

Perhaps not more than fifteen minutes in all were consumed in the actual operation, and the patient left the table in good condition. In the ward about half an hour after the operation, there was considerable venous bleeding from the right tonsillar fossa, but this was easily controlled by one of the resident staff, who employed pressure in the fossa with a sponge saturated with adrenalin and bismuth subnitrate. The next morning there was no bleeding; temperature, 99.8; pulse, 92; respiration, 20. The patient spent a comfortable day.

During the next day (February 6) he complained of headache. This was attributed to constipation, and the patient was given a saline. The next morning the headache had disappeared, and the patient took it upon himself, very lightly clad, to go up on the roof garden in a cold wind, and, as afterwards developed, he was also indiscrete in his diet. That night at 11:30 he had a chill accompanied by pain in the region of the right frontal sinus. The temperature during the chill was 105 degrees.

Nasal examination on the morning of February 8 showed a rather large right middle turbinate with a slight mucous discharge from the middle fossa. During that day he had two chills, about four hours apart, lasting ten minutes each. The temperature in the latter chill reached 106.2°. Nasal treatment was continued, and the next morning (February 9), the fifth day after the operation, he seemed much better (temperature, 100.6°), until in the afternoon, when he became restless. The temperature went up to 105°, and he had a convulsion at about 8 o'clock at night.

The next day (February 10), it was noticed that the left side, particularly the arm, was weak, and to a lesser degree, the leg. Blood count showed 15,600 leucocytes, with practically a normal differential count. Blood culture taken the same day was negative at twenty-two hours and at seventy-two hours. The throat culture was negative to Klebs-Loeffler bacillus. Lungs negative; cardiac murmur about the same as before operation.

On February 11, seven days after the operation, he was restless in the morning but became stupid in the afternoon. The nasal condition had completely cleared up; but a left-sided paralysis had fully developed. The reflexes were not as marked as compared with the sound side, but there was some spasticity; no Koenig or Babinski signs. Disturbances of sensation were present. He could move the toes of the left foot and raise the left leg slightly, but the rest of the left side was powerless. Dr. Ramsey Hunt made a hurried examination, and diagnosed cerebral embolism. Lumbar puncture showed 181 cells per c. mm. Globulins, plus; Fehlings, plus; culture, negative. Both the blood and the spinal fluid gave a negative Wassermann.

During the next two days his condition became increasingly worse. He had severe headache, was restless and delirious at times, and the neck became stiff. The eyegrounds were negative. A second spinal puncture showed 111 cells per c. mm.; otherwise the same as on the previous examination.

On February 9, one or two convulsions were recorded, beginning with a twitching and sucking of the lips; then the left eye, then the muscles of the face became involved, the seizure extending to the left side of the body, the left arm being held rigid during the convulsion; afterwards it was paralyzed.

The next day there were five convulsions, each lasting ten to thirty-five minutes. Sometimes only the face was affected and at other times the whole body. The temperature was between 102 and 103 degrees. The stiffness of the neck continued, and during the next day (February 14) the condition passed from semi-consciousness to coma, with slight convulsions. The breathing became of the Cheyne-Stokes type, and death occurred at noon, the tenth day after the tonsillectomy. It was not possible to obtain a postmortem.

In the absence of a postmortem only a probable diagnosis can be made. The question arises whether the indefinite complaints for weeks preceding the tonsillectomy were the prodromal symptoms of a meningitis which the operation precipitated. Then again the hemorrhage and cough during the operation and the hemorrhage later might have been the source of an embolus. Finally, the exposure on the third day, with the subsequent frontal, and perhaps sphenoidal, sinus inflammation may have been the source of an infection through some open venous pathway.

The finding of a negative spinal fluid culture on two occasions by reliable workers would seem to rule out the presence of a general meningitis. An extremely probable diagnosis seems to be an embolism in the motor area, septic or non-septic in type, probably the former, sufficient to produce a left hemiplegia, causing irritation in the motor area, as shown by the Jacksonian type of convulsions, and causing an adjacent localized meningitis sufficient to raise the cells in the spinal fluid without producing a general meningitis due to any discoverable organism.

604 Park Avenue.

A CASE OF SEPTICEMIA WITH POLYARTHRITIS AND PULMONARY INFARCT FOLLOWING TONSILLECTOMY.*

DR. WILLIAM A. SCRUTON, New York City.

The subject was a maid about twenty-eight years of age. She stated that notwithstanding an appearance of one suffering with an anemic condition, her general health had always been satisfactory, save for attacks of tonsillitis with rheumatic pains in various joints when wintering in the North.

On a date, not exactly fixed in my record, but which was late in January, 1915, Miss A. came under my direction complaining of stuffy sensation and pain in her left ear. She had just been through one of her attacks of tonsillitis.

Examination of the tympanic membrane showed the usual evidence of an O. M. A. C.: post-nasal examination with the mirror revealed a small flat adenoid growth and some mucus clinging to the Eustachian cushions on either side; the tonsils were hypertrophied and contained an unusual multiplicity of crypts. The left ear showed moderate impairment of hearing for whispered numbers. No other hearing tests were made.

Cleansing of the tonsils and the nasopharyngeal tract was undertaken and a gentle inflation of the left eustachian tube given; response was entirely satisfactory. On Feb. 5, the symptoms had subsided; however, on inspection of the tympanic membrane a slight injection of the vessels at the circumference and along the handle of the malleous was noted as persisting and inflation demonstrated some moisture in the tube. Having on previous occasions, in similar cases, cleared up this terminal condition by means of applications of freshly prepared twenty per cent argyrol solution with the Yankauer cotton wound wire, which was inserted well into the isthmus of the Eustachian tube, I determined to institute this procedure in this case. When Miss A. returned the next day, it was learned that pain had developed a few hours after the Eustachian application was made. The pain grew progressively worse, reaching the degree of agony during the night. Examination at this time showed a congested bulging tympanic membrane with tenderness present over the region of the mastoid antrum. Admission to the hospital ward was obtained and myringotomy performed under gas. No pus was demonstrated at the time of myringotomy but a culture of blood which welled up from the incision showed a pure culture of streptococcus hemolyticus. The O. M. P. A. responded kindly to hot irrigation treatment. The tympanum was pronounced normal within ten days and did not again become a factor in the case. To this period, the temperature had not at any registration been above 100.2.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 22, 1916.

Upon request of the patient, and the occasion seeming propitious, I performed a tonsillectomy February 16, by means of the Mosely snare under general anesthesia. The operation was cleanly done and the throat at no time thereafter approached the usual amount of soreness generally expected. In the light of what follows, this is an important point to bear in mind.

In the subsequent development of this report time will be reckoned from the date of the tonsillectomy as the first day, thereby simplifying the chronological presentation of the leading facts and data.

The first, second and third days were passed in fair comfort; the temperature remaining between 100 and 101. On the fourth day the temperature reached 102 and there was complaint of severe pain in the back. From this day on to the fourteenth day the plotted temperature registrations traced a typical picture of low grade sepsis. On the fifteenth and sixteenth days there were sharp rises of temperature in the afternoon to 103.8 A lysis was then established which continued down to the twenty-second day when there was another sharp rise in temperature to about 103, followed by a lysis which brought the plotted curve back to approximately flat on the twenty-sixth day.

Throughout the period just mentioned, various joints became very painful, not bearing pressure or movement, but there was no redness or noticeable swelling; numerous blood counts averaged the total leucocytes at 14,000, the polynuclear nutrophiles at 75 per cent, the erythrocyte counts and the hemoglobin estimations showed the presence of a marked secondary anemia. Urin analysis showed a small amount of albumin, hyalin and granular casts were present.

Blood cultures were taken as follows:

Fourteenth day, negative after 48 hours.

Twenty-sixth day, streptococcus hemolyticus, 36 colonies per C. C.

Thirty-eighth day, streptococcus hemolyticus, one colony per two C. C.

On the sixteenth day, Dr. Hutton reported subcrepitant rales over the right lower lobe of the lung. His previous examinations of the chest had been negative save for some hemic heart murmurs. At this time the patient began to complain of pain in the right side of the chest and coughed frequently throwing off considerable quantities of brown streaked tenacious mucus. The chest examination on the 17th day revealed dullness over the lower portion of the right lower lobe; increased fremetis; diminished breath sounds and voice; loud subcrepitant rales only on coughing or deep inspiration. A diagnosis of pulmonary infarct was made and verified by the subsequent progress of the chest condition.

While still weak the patient was transferred to St. Luke's Hospital in an ambulance, for the purpose of receiving the benefit of outdoor treatment which we were not equipped to carry out. She was discharged cured in two weeks. It should have been stated that the transfer was made on the fifty-first day.

Conclusion: Having developed an O. M. P. A. as a result of instrumentation through an apparently clean field in which there lurked the streptococcus hemolyticus, it would seem to be poor judgment to proceed with tonsillectomy in so short a lapse of time, without first taking cultures of the throat, and especially the tonsil crypts. Cases such as the one I am reporting probably never would occur if preliminary culture and cleansing of the tonsil crypts with suction and antiseptic applications could be instituted for a short period of time preceding operation; however, it is impracticable in most instances in private practice and invariably so in public practice.

I note that the great majority of streptococcus hemolyticus septicemias with which I have been in personal contact during the early stages, have developed painful joints with no redness and little or no swelling and a temperature curve not at all suggestive. Many of the low grade type do not get beyond the polyarthritis stage and are then considered cases of subacute articular rheumatism. A peculiar feature is that in all of the cases, no matter how high or low the degree of infection, the joint symptoms respond to the following antirheumatic treatment: aspirin grs. 5, natron bicarb. grs. 10 q. 4 h.; application, with gentle friction, of oleum gaultheria and oleum dulcis 1:4 followed by binding lightly in large pads of cotton. I am quite certain that most of my colleagues have knowledge of cases in which tonsillectomy was performed on account of a rheumatic history, and seemed to precipitate an acute articular attack. These are, I believe, cases of septicemia; the last flash from the cryptic foci of infection causing the symptomatic condition known to the profession as rheumatism.

All cases complaining of joint pains, however mild, and regardless of temperature, following operations about the throat, nose and accessory sinuses including the middle ear and mastoid process, should have blood cultures taken at as frequent daily intervals as the conditions prevailing will permit of drawing the required quantity of blood.

27 East Fifty-seventh Street.

THE DIAGNOSIS OF SEROUS LABYRINTHITIS.*

Dr. H. B. Graham, San Francisco.

The diagnosis of serous labyrinthitis is made on the following symptoms: Succeeding an acute or chronic middle ear suppuration, or after an operation for the same, there ensue dizziness with or without vomiting; nystagmus to the sound side; the hearing is decreased to the perception of a shout or is lost entirely, the caloric and turning reactions are present or may be lost, the fistula symptom is present. In other words, we may, with the exception of the fistula symptom, have all the signs of a diffuse suppurative labyrinthitis and be unable to make a diagnosis. The life of the patient, and certainly his future ability to hear, may depend upon the diagnosis; it, therefore, becomes very important that a clear idea of the condition be acquired in order that the emergency may be met.

In those cases where we can easily make a caloric test and find it present we have a clear path; but there are times when the placing of even sterile water in the ear after an operation is a dangerous procedure. The dura may have been lacerated or a sinus opened; there may be a fistula in the labyrinthine wall which is depending on a fibrin covering for protection, and we may not care to break down the barriers against infections of the dura or labyrinth. Here we must depend entirely upon our clinical acumen to tell us when to open the labyrinth and sacrifice the patient's prospects for future hearing in order to save his life.

There are, then, two classes of cases where we must depend upon appearances to guide us to the most successful issue, namely: those cases in which a diagnosis may not be made in spite of our functional tests (deafness and non-reactive labyrinth), and secondly, those where it is inadvisable to make these tests. In either case we wait on the clinical course for guidance.

The dizziness and nystagmus have set in and the patient is lying on the sound side or is comfortable on either side, if he is not compelled to move. As long as there is not any headache, as long as the fever ranges between 98.6° and 99.6°, the pulse remains around normal, and there is no marked variation in the blood picture, we are pretty safe in letting the patient alone. But should the temperature and pulse rise rapidly, accompanied by a marked headache, and the dizziness take on a stormy character with vomiting, so that the patient is unwilling to be moved at all, the labyrinth must be sacrified and drainage established even as far as the internal canal.

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*Read before the Pacific Coast Oto-Ophthalmological Society at Portland, Oregon, June 23, 1916.

Case 1. Mrs. M. had had a discharge from the right ear all her life. Two months previous to her first visit to me on August 23, 1915, she had had a polyp removed from the ear, and had been in bed for a couple of weeks following the removal of the polyp on account of dizziness and nausea. The dizziness and unsteady gait had remained, but in a less degree. Weber to the right. Rinne negative. Schwabach indefinite. Fistula symptom positive. Hearing poor on the right (whisper and watch nil; spoken voice at four yards).

At operation a cholesteatomatous mass was removed from the antrum and attic; there was a fistula in the horizontal canal. Following the operation the patient was nauseated, dizzy, had a nystagmus to the left, was totally deaf, and the temperature was 100°. In twelve hours the patient seemed to be somewhat more comfortable and therefore no effort was made to find out if the vestibular apparatus were intact. For the next three days the temperature remained about 99°, and the nausea and dizziness gradually subsided until on the seventh day the nystagmus and dizziness had disappeared and the patient left the hospital.

One week later the patient, tested with the noise apparatus, was apparently deaf. The wound was granulating normally. Four months later the hearing was the same as before the operation, and two months later she could hear a whisper with the noise apparatus. Recovery was uneventful save for the fact that about four months after the operation, for a period of two weeks, there was a marked tenderness over the cerebellar region, with dizziness and errors in the pointing movements.

Case 2. Mrs. de G. This patient had complained of a discharge from the right ear for ten years, intermittent headaches for one year which had become constant in the last two months, and dizziness for two months. The Weber was to the right. Rinne negative. Schwabach slightly short. Hearing for spoken words was one yard, for whisper one-half yard, and with an air noise in left ear she could hear spoken words one foot. The caloric was prompt. Fistula symptom absent. There was a perforation in the attic wall and a slough filling the opening.

At the operation the dura of the posterior and middle fossa was uncovered for small areas. The horizontal canal eminence was intact and the stapes region normal.

After the operation there was a pronounced nystagmus to the right, that is, toward the operated ear, for five days. Patient was deaf on this side. Temperature from 99° to 100°. No vomiting. Slight headache. Twenty-four hours after the operation the bandages were saturated with serum, and the packing of iodoform gauze was removed on the third day under the supposition that the iodoform might be producing an irritation. The cavity of the middle ear would fill with fluid as fast as it could be mopped out; this lasted for a week or ten days and at no time could I ascertain where it was coming from. I assume that it was cerebrospinal fluid. Rigid asepsis was observed and no attempt made to find out if the vestibular apparatus were intact, therefore a positive diagnosis could not be made.

One month later the patient was apparently deaf in the right ear and was dizzy at times for short periods. Two months after the operation there was no dizziness; the patient heard spoken words at room distance and a whisper at three yards, with a noise apparatus she heard spoken words at one yard.

I assume that there was a serous labyrinthitis in this case, although the path of infection I am not prepared to give, neither can I explain why the nystagmus was persistently toward the operated ear. That I was justified in making no attempt to reach an accurate diagnosis is amply shown by the result obtained. Cases like this do arise, when we must stand ready to operate upon the labyrinth should the symptoms increase instead of decrease; but caution should certainly be used in our investigation lest we remove our barriers and turn a harmless case into a suppurative labyrinthitis or meningitis.

200 Post Street.

NASAL REFRACTURE.

Dr. L. L. Stanley, San Quentin, Cal.

In almost any fistic encounter the nose is the most accessible point of attack, and as a result it may be injured to greater or less degree according to the force of the impact. In some cases the blow is not sufficient to fracture the nasal process of the superior maxilla or the nasal bones, but there is force enough to dislocate, distort and bend the cartilage of the septum, the vomer and ethmoid so that there will result a permanent nasal obstruction.

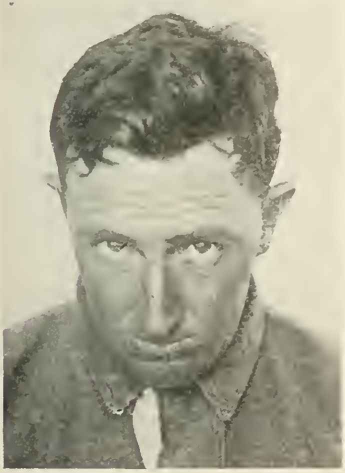


Fig. 1.

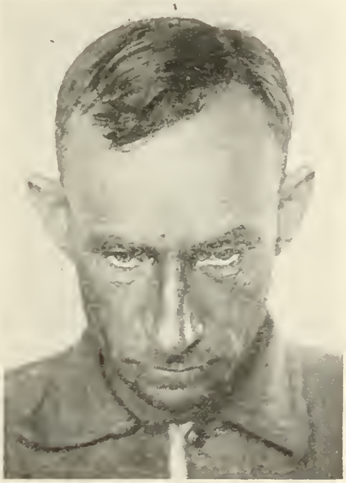


Fig. 1a.

In other cases the bones are broken and the nose is deformed, the bridge being turned either to the right or left. If this condition is soon recognized after the accident and the fracture is reduced, there may be no permanent deformity; but without attention the result will be disfiguring.

An examination of the prisoners sent to the California State Prison at San Quentin reveals the fact that 14.5 per cent have deflected septa, and 5.8 per cent have noses which, on account of some injury, are not straight, but inclined to one side. Some have a combination of both conditions.

The submucous resection is a valuable procedure for the deflected septum, and usually good breathing space is provided by this means. There are several methods described for straightening the nose to produce good cosmetic results, but for the most part these operations are long, painful, tedious, and in some cases deforming and not altogether satisfactory.

Not having had good results with the ordinary methods for straightening noses, another plan was devised. It is believed that to refracture a nose, very little more force is required than that which is used in the first place to produce the original break, and if this force is applied at the right place less force is required, and less damage will be done to the structures involved. The method of procedure is as follows:

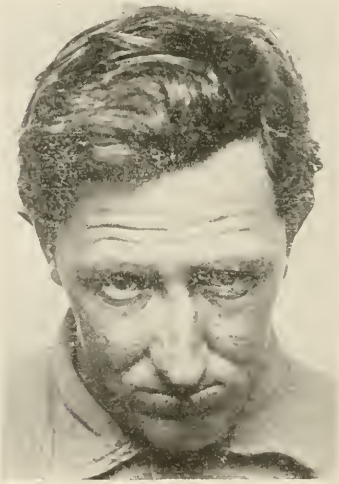


Fig. 2.

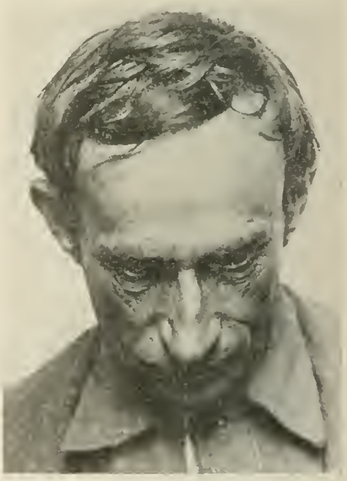


Fig. 2a.

After preliminary preparation, the patient is placed on the operating table and given a very quick ether anesthetic. As soon as the patient is relaxed, the operator places against the convex side of the nose, a round piece of wood, or buffer, six inches long and one inch in diameter. The end placed against the nose is heavily padded.

Then with several strokes of a mallet against this buffer, each stroke being progressively heavier, the nose is refractured and is quickly set in proper position. There is usually some ecchymosis following very soon, but by holding the nose firmly with the thumb and finger, undue swelling is prevented.

As soon as the nose is in proper position, the nasal cavity is quickly packed with strips of narrow bandages, previously boiled in petrolatum. This is packed in rather tightly, and soon the bleeding from the nose is stopped.

By this time the patient will have emerged from the anesthetic, and will be able to co-operate by expectorating any blood which may have run down his throat.

When the internasal packing is in, pieces of gauze, cut to fit over the nose, onto the cheeks, and up to the forehead, are saturated with liquid collodion. These pieces are then placed over the nose in succeeding layers, each one being allowed to harden by means of a current of air which evaporates the ether. In a short time the splint is dry and the nose is held in normal position. On the second day the internasal packing is removed, and on the fourth or fifth day the collodion gauze splint is taken off.

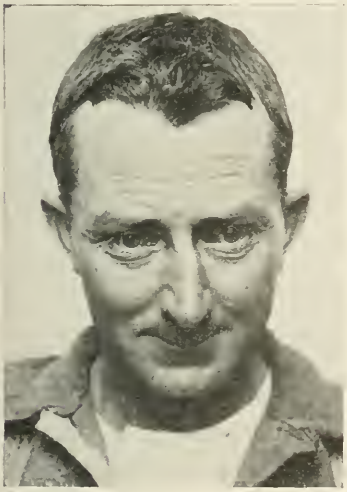


Fig. 3.

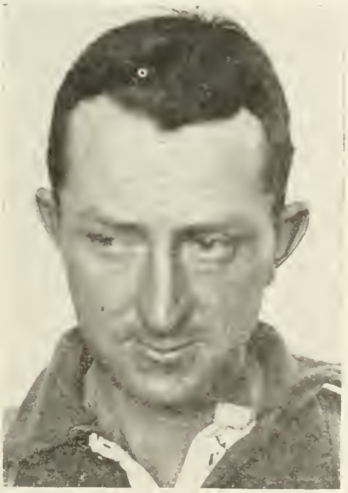


Fig. 3a.

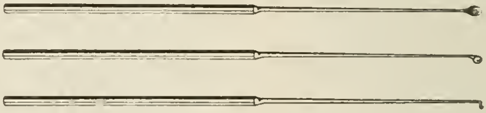
The nose is usually found to be straight and able to functionate better than before. It may be necessary to do a submucous resection subsequently. There is usually a "black eye" which persists for several days. The results have been satisfactory.

AN IMPROVED AURAL CURETTE.

Dr. J. A. Hagemann, Pittsburgh, Pa.

The "ear-scoops" supplied in the ordinary aural instrument cases are practically identical with those contained in the old Gross pocket case. Anyone who has attempted to use one of them through the lumen of an aural speculum is in position to appreciate the advantages of the herewith illustrated instrument, which can be utilized either as an aural spoon or for curettage. The angle at which the spoon is set lends great advantage.

The usual aural hook is simply a slender rod bent at a right angle near the extremity. This one has the short bent portion curved falciform, in manner to correspond with an arc of the external auditory canal. Where a bean or similar globular object obturates the canal, one may, by employing a lubricant, and closely hugging the meatal wall, slip the hook past the foreign body, and then, by giving the instrument a quarter turn, place the curved angular tip in such position that its withdrawal will bring out the intruder. The advantage of the curved over the straight hook is twofold; it permits a longer hook and can be inserted with less probability of causing trauma.



That the prick of a pin is more startling than an accidental cut from a sharp edge of a piece of broken glass is familiar. The application of this axiom suggested the devising of a tympanum perforator having a keen-edged distal end. Even when a local anesthetic is employed the incision with the sharp pointed bistoury is often lancinating. The glide obtainable with this knife implies an advantageously longer incision, a feat which cannot be unerringly accomplished with the time-honored instrument, because the patient gives the usual start as soon as the point touches the membrane.

All three instruments have identical, long, slender shanks, which permit the hand being kept out of the line of vision, afford ample leverage and grant the best conditions for graceful manipulation. They were made for the writer by Feick Brothers Co., of this city.

Highland Building.

THE RESPONSIBILITY AND NON-SUCCESS IN NASO-PHARYNGEAL SURGERY.*

Dr. James E. Reeder, Sioux City, Iowa.

No doubt but what you all have had this statement put before you: "Doctor, my child was operated upon about six months ago for the removal of his adenoids and tonsils, but we have failed to see any benefit from it. We were informed that he would discontinue to breathe through his mouth and his hearing would be much improved. What have you to say about it?"

Concisely—you have failed to make a thorough examination, or the patient has been operated upon by one who is not versed in rhinology as he should be. For, as you know, these little patients frequently have a marked hypertrophic rhinitis and should receive, if possible, both before and after operation, a course in treatment of the iodin-potassium iodid glycerin solutions or at the time of operation one of the several submucous operations to shrink down the erectile tissue of the inferior turbinate, without sacrificing any of the mucosa.

You hear of just such results as I have related much more frequent now than two or three years ago. What does it mean? It means that an operation which has far-reaching benefits when indicated and properly carried out, is being rapidly placed in disrepute with the laity.

And it is all due to the fact that there is not enough stress applied to the importance of our operations. Why such a state of affairs exists it is hard to understand, unless through fear the surgeon may lose his patient, he tries to impress him it is a small thing and very little danger connected with it. This is a gross mistake, for it prompts inferior and less qualified men to do this work, which frequently ends disastrously.

How easy it appears of performance to see a successful cataract extraction, but the following seven days is often more trying and the brilliancy of the operation shorn of results by improper after care.

Just how urgent the removal of an hypertrophy or the correction of a deflected septum should be, I think our conscience is called in to play an important role.

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*Read before the Northwestern Ophthalmological, Laryngological, Rhinological and Otological Society, at Omaha, Neb., June 8, 1916.

It is not always the question of an immediate improvement or benefit a patient is looking forward to, but how much harm is going to result if immediate attention is not given.

You have all had cases where you insisted it was dangerous to life not to have immediate attention, but your patient has survived to continuously remind you of your error.

I had a distressing experience about six months ago. I was called to do a parencentesis in an acute otitis. Patient seemed to be doing nicely for about two weeks, when the discharge suddenly increased. There was slight tenderness over the tip of the mastoid, which continued for about eight days. A skiagram was taken which proved positive; there was a slight drooping of the posterior superior canal wall. I advised a mastoidectomy; patient refused; the patient is in excellent health to-day, and I am anything but a gentleman.

If the removal of a tonsil is such an easy matter, why do we see so many bad results? I am sure there is not a member of this society that will not agree with me that a tonsillectomy is a difficult procedure. Aetius, writing in the early part of the sixth century, was the first to object to the complete removal of the tonsils. Quoting in his language: "Those who extirpate the entire tonsil remove at the same time structures which are perfectly healthy and in this way also give rise to serious hemorrhage." Yet the importance attached to a proper tonsillectomy is often spoken of by the laymen and general practitioners as of little consequence and easy of performance.

But frequently we see patients who have not been benefited and often much worse than previous to the operation. A deformed palate, a dry throat, post-nasal stenosis, cicatrices, tonsil tissue buried under fibrous bands, all this we encounter following tonsillectomy.

I believe many of the bad results are due to incomplete anesthesia, which is, indeed, an important item in such a difficult and often trying operation. I believe there would be fewer deaths from hemorrhage if a nurse who has had special training along this line should always watch the patient while coming out of the anesthetic.

I do not want to be misconstrued in the foregoing as being critical, but I would like to see our specialty placed upon a much higher plane than it is, which can be done by preventing the untrained from assuming responsibilities of special work, just as the nongraduate can no longer practice general medicine.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

May 24, 1916.

DR. HENRY L. LYNAH, *Chairman.*

Osteomyelitis of the Sinuses of the Nose Complicating Scarlet Fever. DR. HENRY L. LYNAH.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

Case of Frontal Sinusitis with Orbital Fistula. DR. FRANCIS WHITE, for DR. HARMON SMITH.

Joseph D., a young lad, gave a history of having had grippe four months ago, preceded by a slight discharge from the nose; two days later he had a swelling in the median line. After two or three days this swelling extended down under the left eye, and shortly after that it passed to the other side and closed that eye. During that time the swelling did not vary much in size. Two weeks ago, a discharge appeared on the upper lid of the left side, and the child was admitted to the Manhattan Eye, Ear, and Throat Hospital. The x-ray showed the following: "Granulations or pus in the frontal sinus. Ethmoids clear. Thick membrane in right antrum. Peculiar-looking roughness at anterior wall of the frontal sinus, externally. Suspicious of specific condition."

The patient was put upon increasing doses of K. I., and has taken 20 drops t. i. d., and under this treatment has improved markedly. He has had no nasal treatment whatever.

Wassermann, negative.

DISCUSSION.

DR. ARD said that he had a similar case under his care at the present time. Some time ago the patient had consulted his family physician for a swelling under the right eyebrow. This was incised and a fistula remained. When Dr. Ard saw the case a probe could be passed into a cavity that was apparently the frontal sinus. An x-ray was taken and from the appearance of the plate, Dr. Dixon doubted the presence of a frontal sinus. The anterior end of the middle turbinate was removed and the nasal duct enlarged; after that the discharge lessened and on two occasions the fistula closed, only to reopen. An external operation was decided upon and the usual incision made. On cutting down over the frontal sinus a large sequestrum of bone was found and removed; the frontal sinus was present and packed with granulation. After thorough curretting the wound was sewed up except the lower angle where a small wick of gauze was placed. A free opening was found from the frontal sinus into the nose. Convalescence has been uneventful and the wound is now practically well.

Bilateral Polypoid Hemangioma of the Nasal Septum. DR. J. G. CALLISON.

(Published in the present issue of THE LARYNGOSCOPE.*)*

Correction of Nasal Deformity. Dr. L. M. Hurd.

The patient, a boy, was presented to show what can be accomplished by a little patience. He was first seen by Dr. Hurd in October, 1915, having had a button in his nose, followed by a loss of the lateral and other internal cartilage; two years before, he had had paraffin injected into the nose and the paraffin had become lumped up. Dr. Hurd attempted to do a rib transplantation, but the second day a haematoma developed, which became infected and filled with pus. At first Dr. Hurd thought he would try to take out the bone graft, but concluded to let it alone and treated it with bismuth paste, and persisted in this treatment until the end of February, when a sequestrum was removed. The x-ray showed a perfectly good piece of bone in place. In March, the wound was well and perfectly dry. Unfortunately, the x-ray picture had been mislaid. The boy when first seen had a perfect saddle nose, and the condition now is much better than before the operation. The bone can be felt in place, distinctly. It was altogether a matter of patience and the use of bismuth paste.

Presentation of Specimens—Naso-pharyngeal Fibroma; Epithelioma of the Tonsil; Osteo-sarcoma of the Lower Jaw. Dr. L. M. Hurd.

The epithelioma of the tonsil occurred in a man, aged 60 years, otherwise perfectly healthy; he had not noticed any trouble up to two months before he came under observation, when he felt some pain and interference with swallowing and breathing.

The fibroma of the naso-pharynx occurred in a boy 15 years of age. One year before there had been a removal by a physician in the West, but the condition promptly recurred, and in February he was referred to Dr. Hurd, who removed the growth by divulsion. There was very little hemorrhage. The packing was removed the next day, February 16, and on February 21 the boy went home. The growth had invaded the sphenoids and the right nares. The pressure had caused absorption of a great part of the sphenoidal walls. These growths are hard and tough, and difficult to get out. Both nares were threaded with a string, to which tampons were attached, so that if severe hemorrhage occurred they could be pulled up and used to plug the apex; but they did not have to be used for this purpose and were taken out the next day without any hemorrhage.

The patient who had the osteo-sarcoma of the lower jaw came to the Nose and Throat Hospital on September 2, with the history of having had a lower tooth removed, but that the area had not healed. The dental surgeon at the hospital had a radiograph made, and as a white area showed there, he thought that the man had a cyst of the jaw. On October 10 they curetted out what they thought was a cyst, but it continued to grow, and when Dr. Hurd saw the case in consultation there was a mass running down below the jaw as large as half an orange. The patient was seventy years old and not in very good condition, so he was operated upon under local anesthesia. He was given ¼ grain of morphine and gr. 1-100 hyoscine, one an hour before the operation; and after he was on the operating table the third branch of the trigeminus was injected at the foramen ovale and the cervical nerves along transverse processes, also the edge and base of the tongue. The man was perfectly awake, but was a little drowsy. The incision was made, the external carotid ligated and the glands of the neck removed, as well as the left half of the lower jaw. The man had no feeling at all during the operation. The only thing he objected to was when something was held in his mouth. When the packing was taken out the next day, he gave a good loud yell, showing that if he had been hurt during the operation he would have made it known.

DISCUSSION.

Dr. Abraham said that he had had a case similar to that presented by Dr. Hurd—a tertiary case, operated upon last September. Wassermann test was postive, and the patient was treated for syphilis with salvarsan, receiving five or six injections; after getting two or three negative tests, it was decided to operate. A piece of the rib was placed in the nose for the saddleback deformity. Since October to the present time there has been a fistula, and by probing one could readily detect the free bone. An x-ray also showed the free bone. With a curette, the tract was entered, and a sequestrum similar to that shown by Dr. Hurd was removed. Another x-ray would be taken later.

Dr. Faulkner said that he had had some experience in the injection of the nerve for trifacial neuralgia, and had so treated a great many cases which he intended to report later. The difficulty is to get within the sheath of the nerve. In using alcohol, he puts in the needle and injects a drop or two of 1 per cent cocaine, and gets almost immediate anesthesia; but unless the anesthesia is almost immediate he does not consider that he is in the nerve sheath.

By working on the cadaver he can usually get in the sheath of the nerve but if he stops work on the cadaver he cannot do it.

He had learned some things very definitely—alcohol injection is no good unless you inject it within the sheath of the nerve. For this purpose he employs a special needle with a very abrupt bevel, and unless he succeeds in getting almost immediate anesthesia with the cocaine, he does not inject the alcohol, but tries it on another occasion. Sometimes one may not succeeed till he has tried several tissues. He has not had a single case of recurrence where he did get into the sheath of the nerve. Experience in these cases extends over a period of three years. One patient had had three alcohol injections, and said that the injection Dr. Faulkner made was different from the others he had had before. As they had not produced any numbness of his second and third divisions from the two injections he had absolute anesthesia in the region. They sometimes complain of the numbness for some time but usually seem to forget about it after a while.

Primary Epithelioma of the Frontal Sinus; Report of Two Cases. Dr. D. S. Dougherty.

(Published in the present issue of The Laryngoscope.*)*

The Treatment of Frontal Sinus Suppuration. Dr. Howard A. Lothrop, of Boston (by invitation).

(Published in the present issue of The Laryngoscope.*)*

DISCUSSION.

DR. ROSS H. SKILLERN (Philadelphia) said that as the Chairman had remarked, it was most unusual and most interesting to hear the observations of a general surgeon upon one of the specialties of the Section, speaking from the general surgical standpoint; but that it was very difficult for the specialist to discuss such an operation as presented by Dr. Lothrop, for the simple reason that they look upon it from an entirely different standpoint.

Dr. Lothrop would get these cases as a general surgean, *in extremis*, so far as the general pathological condition was concerned, whereas the specialist sees the case from the beginning—from the first catarrhal condition, the first headache, etc. Therefore to discuss the subjects against each other was difficult.

As he understood it, the object of the operation was to make as large a communication with the nose as possible,—in other words, Dr. Lothrop's remarks dealt almost entirely with the anterior superior nasal spine, the triangular portion of the bone up there; he takes away that process, thus enlarging the frontal sinus. It did not seem as though Dr. Lothrop was familiar with the work of one of our German confréres, Halle, who endonasally does the same operation by means of a simple rasp until he can make a sufficient opening, and then, by means of a burr, cuts from above downward and from in front backward—making the opening as much as possible through the nose.

So far as the value of the operation was concerned, Dr. Skillern said that it had been his experience that it was not necessary in all these frontal sinus cases to make as large an opening as possible. In the first place, the cases may be divided into two great groups: those that will get well by aeration and drainage, and those that will not. Those that will get well by aeration and drainage are those where there has not been much pathological change, so that a moderate amount of aeration and drainage will bring about a cure. On the other hand, where there are many pathological changes, it will not be cured by drainage, even if the opening is made as big as the thumb. As for curing a mucosa that has some pathological condition, unless the pathologically changed tissue is removed, the sinus will not recover.

Dr. Lothrop had said that our surgery must be more or less blind surgery, when we do this work through the nose. Dr. Skillern said that he would be very sorry indeed if laryngologists and rhinologists had to admit that the surgery they do up there is blind surgery. They could see pretty well what they are doing, and he felt compelled to take exception to that particular remark.

He could not exactly appreciate the object of opening up both sinuses, and he did not see at all why it was necessary to make such a large opening that it necessitated taking away so much of the septa of the nose. If drainage is going to prove sufficient, as much as was necessary could be done from one side. If it is not going to work, it made no difference how big the opening was. In his opinion it was advisable to conserve as much in that region as possible.

He also took exception to Dr. Lothrop's statement regarding the value of irrigation. There was no man present who had not seen directly the value of irrigation. Many had had patients who had been treated by others ineffectually, and had cured them by two or three irrigations. Of course, however, where pathological changes are present, irrigation is not going to do any good—neither will drainage or aeration; the pathological changes must be removed to establish a cure.

The usual endeavor of frontal sinus operations is to obliterate the cavity, and this is done by most surgeons. Sramaylenko showed on dogs that when he removed the frontal sinus and closed up the cavity the sinus became totally obliterated by new tissue. Dr. Skillern said that in two or three instances he had had occasion to re-open the sinus, only to find that the cavity was obliterated; consequently he believed that all sinuses that are operated upon radically tend to grow smaller and obliterate themselves.

As far as the external operation is concerned, we are getting away from it more and more all the time, for intranasal work is curing most of our patients. We have drawn our lines pretty tight, and have now only three indications for external operation: (1) when we have done the intranasal operation and the patient continues to suffer; (2) when there are such conditions present as external fistulae formation, or (3) threatened cerebral and orbital complications.

As far as fistulae after the Killian operation was concerned, he had never seen one follow. He had done many Killian operations, and while he had seen diplopia and other bad conditions,—in one instance a death from meningitis—he had never had a fistula formation follow. He had, however, operated on a number of fistula cases following other operations on the sinus, with complete cure of the fistula. Dr. Lothrop had said that this part of the antero-superior nasal spine was the part to be removed. Dr. Skillern said that knowing that Dr. Lothrop would bring some specimens of this, he also had brought several, showing very small nasal spines and some with practically none at all; a rasp getting into any of these would open it up almost as well as an operation devised to take away the spine itself. In every one of these cases if the patient had frontal sinusitis, aeration and drainage could be secured by the intra-nasal method as well as the method shown by Dr. Lothrop. He goes in from above downward; why cannot we go in from below upward and do the same thing without injuring the external plate and without destroying the septum and other parts that might be injured? While this method is unquestionably effective, it would seem that at this time less extensive surgery would be indicated in most of the cases of chronic frontal sinusitis that come to the hands of the rhinologist.

Dr. Hurd said that he hardly felt qualified to discuss the paper for he had never seen the operation or its results. Dr. Lothrop performed a more extensive operation than the rhinologists do through the nose —a Halle operation. In discussing the matter one should take into consideration the number of cases that need an external operation. Probably not more than 5 per cent of the cases of frontal sinusitis need more than simple treatment—taking out the middle turbinate and anterior cells and enlarging the astium frontalis. A certain percentage, however, about five per cent, do not get well with an operation like that. One ought to be able to differentiate the cases that need an external operation right there and then. Most of them are complications that arise from the ethmoid as well as the frontal sinus.

Dr. Hurd said that he disagreed with Dr. Lothrop about the size of the opening, and did not feel that the doctor's opening was large enough to investigate the frontal convolutions; the Killian operation gave a better one for that—it gives a view of the entire frontal wall of the sinus and the ethmoidal labyrinth where most of the complications arise, and if we do this Dr. Lothrop's (?) operation we miss the main point we are after. That there is a great deal of technique in the Killian operation, of course. Deformity? Yes. In a deep, high sinus there is considerable deformity; but if the technique is good, in a small or medium-sized sinus, the deformity is *nil*. The results are usually good. There is the one drawback, that there may remain a spot that does not become obliterated before it closes up—behind the bridge, the point that Dr. Lothrop was bringing out, where it bridges across with fibrous tissue. That will occur sometimes.

One point of advantage which Dr. Lothrop's operation possessed over the Killian operation was that the cell would sometimes appear in the crista galli or very near it. Dr. Hurd said that he himself had missed it several times and had had to go back after it.

Dr. Lathrop: Go back after it and see it because you are going by a different route.

Dr. Lothrop takes down the septum and opens the other sinus; he takes down some of the nasal septum; and had reported cases without any bad results. Dr. Hurd said that he considered a septal abscess as a very serious condition; if a chondritis occurs the patient is liable to lose all the nasal cartilage and have a flat nose.

The point of irrigation: After the frontal sinus is opened, the case will get well, irrigation or no irrigation; drainage is established in the thickened tissue, irrigation will not do any good; bismuth paste will sometimes be effective, but not irrigations. (Demonstration on board.)

At times he had found that a cannula passed up through the tissue has caused a bloody tract, and near there there was pus under pressure.

Dr. Coffin said that he had been especially interested in hearing Dr. Lothrop's paper as he had felt indebted to him ever since receiving his reprint descriptive of the operation discussed by him to-night and had many times thought of expressing his appreciation to Dr. Lothrop but had procrastinated and was now glad for this opportunity. He then cited a case, that of a lady, upon whom he had operated seven times for involvement of the frontal sinus and recurrences. At each recurrence a fistula occurred which would not heal until radical measures were resorted to. Washes through and through from within outward and from without inward had no effect. There was in the case a specific element. The original operation had been after the Ogston method except that the wound was kept open and packed, which resulted, as it always does, in a considerable contraction, adventitious pockets and frequent recurrences. The night previous to the last operation, Dr. Lothrop's reprint came to hand and Dr. Coffin recognized in this operation what would probably bring permanent relief to his patient. The operation was done and now one can enter the operated sinus from either nostril and no further trouble is anticipated. In passing, Dr. Coffin stated that his patient had an aortic insufficiency and a blood-pressure of 230. Oil-ether anesthesia was administered rectally by Dr. Gwathmey with most gratifying results. Dr. Coffin expressed the opinion that Dr. Lothrop's operation was ideal in all cases in which sufficient drainage from the diseased frontal could not be established nor maintained unilaterally and further that it was a sufficient operation for the relief of an independently diseased frontal of small size and smooth interior; he could not see, however, that it could be sufficient, as Dr. Lothrop had described it with an incision one inch in length not crossing the supra-orbital notch, in those cases having practically multiple sinuses one one side which extended perhaps to quite the external angle of the eye.

Dr. Coffin called attention to Dr. Lothrop's criticisms of the Killian operation, that there followed a contraction on the side of the nose over the opening into the ethmoidal tract; this Dr. Coffin said he wished to contradict and this he did in the light of his own experience and in the presence of many men who for a number of years had been doing the Killian operation. As to cosmetic results following the Killian operation, Dr. Coffin agreed with Dr. Hurd that unless the frontal sinus was considerably broad and deep, there was but slight deformity and practically no scarring along the line of incision, at least not sufficiently marked to be detected at ordinary *tete-a-tete* distances. The frontal sinus is usually associatedly diseased, especially with the ethmoids and the operation to be done in any particular case depends entirely upon what one wishes to accomplish—whether simply the relief of pain—the stoppage of discharge or possibly the elimination of danger to the brain or eye. Of course, when the above condition prevails, that is associated disease, one doing the operation advised by Dr. Lothrop must needs follow it by an intranasal operation for the excentration of the ethmoid and sphenoid. This, to Dr. Coffin, seemed a foolish procedure, inasmuch as thorough excentration of ethmoids is better done through an external opening and with less danger to the patient. Dr. Coffin considered the Killian operation the operation of choice in all cases of pan sinusitis. The operation for pan sinusitis is frequently spoken of as a frontal sinus operation. The operator having in mind at the same time the fact that he means the operation on several sinuses.

Dr. Coffin asked Dr. Lothrop what he would do in those cases having but one frontal sinus.

Dr. Myles said that Dr. Lothrop's operation supplied something that had long been wanted. Many years ago he himself had tried by an external operation to remove that part of the nasal process of the superior maxillary bone which forms the floor of the frontal sinus, and obtained some fair results, but it did not appeal to him as being a perfected operation and he dropped it. What Dr. Lothrop had said about the removal of the bones beneath the orbital ridge in the Killian operation was true. The periorbital tissues contracted toward the nasal septum and cribriform plate and prevented drainage from any unobliterated area. It would seem, if no extensive inflammation on the septum or in the crista gallin or cribriform plate regions followed, that Dr. Lothrop had offered a valuable operation for the removal of obstruction and the drainage of the two sinuses. In apparently hopeless antral cases we may remove the wall and secure proper drainage without curettage, and often a very remarkable change will take place. We should expect the same in frontal sinus cases.

One of the aims of Dr. Lothrop's operation was to remedy diseased conditions where other operations had failed, such as the Killian and intra-nasal operation, and the doctor had shown a remarkable record of recoveries.

Dr. Yankauer said that he had had no experience with this particular operation, and could only report his experience with Halle's operation. He had made a set of burrs corresponding to those described by Halle, and had done the operation described by him three times—twice on one patient and once on another. Unfortunately, all these cases had been operated upon intranasally, and it was impossible to make Halle's flap in the outer nasal wall so that the opening finally contracted and left the drainage very inadequate. With the Halle burrs, as with other instruments, he had found it practically impossible in the large majority of cases to make a straight opening into the frontal sinus without coming out in the angle of the eye. If this operation proved to be as feasible as it appeared to be in the specimens which Dr. Lothrop had presented, it would be a great gain in many instances.

He doubted, however, whether Dr. Lothrop was correct in stating that it was harmless to open the opposite frontal sinus. Dr. Yankauer said that he had seen many sinuses that were wide open, where the drainage was full and adequate, in which infection continued. Many of the organisms which infect the sinuses burrow down deep under the mucous membrane, and once they get under the surface it is very difficult to get rid of them, and they will do that often, whether or not there is drainage.

However, one should be guided by practical experience rather than by theoretical considerations, and Dr. Lothrop's record of thirty cases was a very remarkable one and should induce others to follow his advice and try this operation.

The mechanical difficulties of performing the operation were greater, however, than would be realized at first. As Dr. Myles had said, the bone in that neighborhood was very hard; in old, chronic cases there might be some softening, but usually it was like a piece of ivory, and it would take a long time to file through it with rasps. He would like to know how long it took Dr. Lothrop to get through. In using the Halle burr himself, with a very rapid motor, he had found that it required a little time to get through this very dense, hard bone; it was difficult to do it, although the burrs worked very well on dry bone outside.

Dr. Lothrop (closing the discussion) said he would endeavor to cover the points in the order in which they were suggested. In the first place, the majority of cases that he had operated upon had undergone previous operations, although in a number of instances his operation had been the first external one performed. He believed his operation was indicated in every instance where any external operation was necessary. He did not consider his operation a destructive, but a conservative one and, at the same time, more radical than any of the other types of operation. There is really less destruction of bone than in the Killian operation and a minimum of soft part injury, particularly when compared with the Killian. He recalled two cases, one of which was operated by his method and the other by the Killian technic. In the first instance, there was practically no soft part swelling and the patient left the hospital in a few days. The second case was confined for several weeks because of sepsis in the soft parts about the wound. After the sinus has been opened, whatever is found wrong with the mucous membrane must, naturally, be treated just as you would treat polyps, granulation tissue, necrosed bone, etc., in any region. This is done, of course, at the time of the original operation. It is perfectly obvious that when one depends upon the internal route the cavity of the sinus cannot be explored or properly treated in the presence of the above complications.

When he spoke of a "blind operation," he did not wish to be misunderstood as saying that this special Section or that any of the special surgeons were doing blind work, but that any operation performed on a part where you cannot see just what your instrument is doing, is working in the dark to a certain extent, no matter who the operator may be and in that sense the technic cannot be so well carried out.

The cases of failure after any operation, whether intra- or extra-nasal, that he had seen had been relieved when the drainage was made efficient by whatever method. He felt that the underlying cause of failure in any operation was due either to the fact that there was so much obstruction in the vicinity of the ostium frontale that the exudate could not escape or because there were pathological conditions within the sinus which required treatment. All cases of persisting external fistula are due to obstruction between their opening and the nasal cavity and this is usually in the vicinity of the ostium frontale. If you leave a sinus full of polyps the symptoms will continue until the polyps are removed. If you fail to remove all of them at the first operation the chances are that those remaining will increase in size and others appear just as within the nasal cavity. In such cases the mucosa should be carefully and thoroughly curetted. In his series of cases the only one that required a second operation was just such a case. At the second operation the sinus was found filled with polyps and after this second procedure, which included careful curetting, there was no subsequent trouble.

Dr. Skillern was right when he said that in time frontal sinuses tend to become obliterated. He himself had observed this frequently but, if the sinus is large, obliteration does not entirely take place. In all cases it is only the angles and narrow borders which become filled up with permanent scar tissue, depending in a measure upon the distance between the various walls of the sinus. The larger portion toward the inner aspect of the sinus persists. Dr. Skillern said that he could see what he was doing in the intra-nasal operation by intra-nasal inspection. Dr. Lothrop said that such was not his experience. He said that he never could observe from within the region where he removed the dense bony ring anterior to the ostium frontale—that this region was accessible only to curved drills and rasps as carried out in his operation. Dr. Skillern had spoken of the removal of the portion of bone in the middle line and indicated that it was generally thin, showing specimens, and intimated that Dr. Lothrop had selected specimens which happened to contain more dense bone. Dr. Lothrop said that he referred to the thick bony mass forming the upper ends of the nasal bones and nasal process of the superior maxilla and, in every instance, these possess considerable thickness and their location is not only in the middle line but they extend well around in front and laterally. He indicated that this was the chief feature in his operation.

In two instances he had seen small abscesses in the septum which cleared up very rapidly after a small incision was made. In his operation the portion of the septum of the nose removed had to do with the middle plate of the ethmoid and did not go so low as the triangular cartilage. Hence, Dr. Skillern is probably wrong in attributing the abscess to lowered vitality of injured cartilage. On the other hand, no one hesitates for a moment to do a submucous resection which always involves cartilage injury. He believed it was reasonably easy to exenterate the necessary amount of turbinate body according to the cells involved and at the same time carry out this procedure with reasonable safety. He usually employs the method suggested by Dr. Mosher and had done this in a number of cases in his series where the ethmoidal cells were involved as well as the frontal sinus. He had also at the same time in other instances removed the nasal wall between the antrum and the nasal fossa below the inferior turbinate in cases where the antrum acted as a reservoir.

Dr. Coffin had spoken of multiple sinuses. That was new to him. He had always understood that there were never more than two sinuses and that sometimes only one is in evidence as a true sinus, the opposite side being represented by small ethmoid cells. On the other hand, one often finds incomplete septa more or less subdividing either sinus but never producing isolation. Such experience was based on the observation of about 1,000 specimens at the Harvard Medical School.

Dr. Lothrop believed one great advantage of removing the floor of the two sinuses, in addition to obtaining the extra room, was the fact that on the well side there was healthy mucous membrane ready to epidermize the diseased side. In no case of his series was there any complication resulting from making use of the healthy side.

Dr. Lothrop said he was not familiar with the Halle operation, which he understands is an intra-nasal effort to make a large opening on one side including the turning up of flaps to epidermize the area injured. He was rather skeptical as to the possibility of carrying out such technic by turning flaps successfully. On the other hand, these flaps being of soft parts would tend to obstruct the opening and thereby make narrower just the region where one was striving to obtain all the room possible. In performing the Halle operation, if bone was removed near the median line, he thought quite often the other sinus would be opened, sometimes unbeknown to the operator.

Bacteria are much more virulent and produce more injury when under tension; consequently, if there is free drainage, resolution follows rapidly. He had known of one or two exploratory operations performed by others where infection followed because of the retention of blood clot in the sinus.

Dr. Coffin asked whether or not Dr. Lothrop would find himself handicapped in one of these cases where there was only one sinus. Dr. Lothrop replied in the negative, saying that previous examination by x-ray and otherwise would furnish sufficient advance evidence as to the number, size and situation of the sinuses.

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SURGERY OF THE TEMPOROMANDIBULAR ARTICULATION.*

DR. L. W. DEAN AND DR. W. F. BOILER, Iowa City, Iowa.

The proximity of the temporomandibular joint to the middle and external ear makes it of particular interest to the otologist. The fact that it is so frequently involved in diseases of the tonsils and of the peritonsillar structures and in dento-alveolitis makes it of great importance to the laryngologist.

It is not unusual for patients to come complaining of sore throat with a disturbance of occlusion and feeling that the whole trouble is in the throat, when an x-ray picture of the temporomandibular joint will show a collection of fluid between the condyle and the socket. This condition may be secondary to a throat lesion or the result of a focus of infection in some other part of the body. In our experience the patient usually refers the trouble to the ear; but the x-ray pictures in the presence of an apparently normal ear, demonstrate the trouble to be in the temporomandibular joint.

It is not our intention to review the surgery of the temporomandibular joint. Murphy and Kreuscher[1] have recently published a comprehensive review of the matter and we anticipate you are familiar with this report. Following such a comprehensive and exhaustive treatment of the subject it would be a waste of your time to again have the matter reviewed. Consequently, we are going to confine the paper to a report of several cases with trouble in the temporomandibular joint which we have had during the past year and which have presented some very unusual features.

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*Read before the American Academy of Ophthalmology and Oto-Laryngology, Memphis, Tenn., Dec. 11, 1916.

Case 1. A case of bilateral complete true bony ankylosis of the temporomandibular articulation which was either congenital or acquired immediately after birth.

The case which we have to report was one of both true and false ankylosis, in that there was an osseous ankylosis of the joint itself, the true ankylosis, and in addition to this cicatricial tissue between the neck and ramus of the bone and the surrounding tissues and between the coronoid process, the zygoma and the neighboring structures, producing a false ankylosis. In our experience almost every case of true ankylosis has associated with it a false ankylosis.

The condition in which the mandible cannot be moved apart from the maxilla a normal distance is known as ankylosis. Brophy[2] quotes Blair's statistics and states that they are in accordance with his own observations. In his series trauma was the most common single cause. Nearly 50 per cent of all cases were due to this factor. A blow or a fall on the chin was the most frequent single trauma. He places scarlatina as the second factor causing ankylosis. Suppuration following this disease accounts for about 20 per cent of the cases. The following diseases play a part in the order named: Otitis media, dento-alveolar abscess, typhoid fever, pneumonia, measles, variola, diphtheria and rheumatoid arthritis.

So-called congenital temporomandibular ankylosis is very unusual, also that due to trauma at birth or during delivery. The prevalence of ankylosis of the mandible during childhood appears logical when we consider that accidents and many of the infectious diseases to which it is due are more prevalent during the early period of life.

Ankylosis of the joint may appear soon after the trauma or many months later.

The obstetrical forceps may cause fracture of the base of the cranium or of the mandible near the joint in the new-born and ankylosis may follow. Such cases may be mistaken for congenital ankylosis of the mandible.

A. E. White, female, six years of age. Referred by Dr. J. D. Cantwell, of Davenport, Iowa.

Entrance complaint: Lower jaw trouble.

The child has had the mandible retracted since birth and has never been able to open the mouth at any time more than one-eighth of an inch. Early in life the child was not able to nurse properly, and the mother attempted to force the mouth open by using her finger as a wedge. In this she was not successful.

The mother was a bleeder and during the birth of the two preceding children, she had had a great deal of trouble, and at the last delivery, almost died. During the delivery of the child under consideration, owing to very poor heart action and very little strength and after prolonged labor, it was necessary to apply forceps.

The attending physician discovered the ankylosis right after birth. He examined the child at the time of birth and his impression at that time was that the trouble was a congenital affair. During the first eight months of the child's life she cried almost continuously. She had mumps when four years of age, and measles at five.

Examination: Mandible retracted and ankylosed. Amount of movement of mandible enough to clear the teeth about one-eighth of an inch. The child throughout her life has never been able to insert even the tip of the tongue between the incisor teeth. The angles of the jaw are laterally very prominent and there are deep indentations inferiorly just anterior to the angles. The mandible is very poorly developed and there is an overhanging bite of fully three-fourths of an inch.

The skull, bones of the face and superior maxilla are well developed.

The teeth are reported upon as follows by Dr. Fenton: "Upper lateral temporary incisors not present. Radiographs show permanent lateral incisors in alveolar process. Upper temporary right and left cuspids badly decayed with pulps dead. Lower left temporary lateral not present."

X-ray examination of the mandible: Unfortunately prints from these x-ray plates do not show the changes well. These can only be seen properly by a stereoscopic examination.

Right mandible: Body very thin, so much so that anteriorly there is only a paper plate of bone between the unerupted teeth and the margin of the jaw. The coronoid process appears with the apex above the upper margin of the zygoma. In front of the angle of the jaw, the body is bent obliquely downward. Just in front of the angle is the first permanent molar; above it high up in the ramus, really in the body of the coronoid process, is the second molar bud. The condyle seems to be crushed, the top is blunt and in the socket. The eminentia articularis which can hardly be seen is apparently flattened.

Left mandible: Appearance of body, ramus and coronoid process the same as the right. The condyle seems fractured, pushed down and back, being higher and further back than normal. Condyle fits into a square socket.

Diagnosis: Fracture of the neck of the condyle with crushing of the condyle on each side. Fracture of the angle on each side with mandibular bilateral true bony ankylosis.

Operation: Resection of the neck of the condyle following the procedure as described by Murphy in 1902, with resection of the coronoid process of the left mandible. Under ether anesthesia, the joint was exposed by making an incision one and one-eighth inches long beginning just in front of the ear and extending along the superior border of the zygoma. From the anterior end of this incision a short incision about one-half an inch long was made upward and forward so as to avoid injuring the temporal and orbicular branches of the facial nerve. At the posterior end of the incision a second incision perpendicular to the first, about two inches long was made. The edges of the wound were drawn downward, the lower lip being displaced down below the lower border of the zygoma. The tissues were displaced downward until the neck of the condyle was exposed. The skin and the tissues in the lower part of the wound could be tightly retracted using a blunt retractor without injuring in the least the facial nerve. The articulation was fully exposed and no evidence of a joint could be discovered, the head of the mandible seeming to fuse with the socket in the temporal bone. Using a wedge between the jaws to tell when there was any loosening of the joint, the neck of the condyle was attacked with chisel and hammer. A v-shaped groove was chiselled across the neck and pieces of bone removed with small rongeurs. This was continued until the wedge indicated that the bone was divided. The wedge was used by Dr. Fenton. It was especially constructed of very dense wood and was used by him as a pry to tell when we had a movable mandible. When the mandible was loosened, using rongeurs, the condyle and the upper part of the neck were removed. No protector was used for the internal maxillary artery; none seemed to be necessary. The small vessels were ligated and the hemorrhage controlled with hot water and adrenalin.

The next step was the preparation of the fascial flap. The triangular flap of skin outlined by the incision was elevated. A u-shaped flap of fascia and muscle one and one-half inches wide and two and one-half inches long having its base at the upper margin of the zygoma was elevated from the surface of the temporal muscle. The flap was freed from above downward; it was left attached to the zygoma, folded down into the wound, the lower end being tucked down underneath the upper margin of the ramus of the mandible. The flap was held in position by means of two catgut sutures, one placed at the anterior-inferior angle, and one at the posterior-inferior angle of the flap. The coronoid process which was underneath the zygoma was found bound tightly to the zygoma and it was exsected before the flap was placed in position. The jaws were now widely separated by Dr. Fenton, using a wedge and a plastic gutta percha wedge was placed between the teeth of the right side and fixed in position. This was done to prevent the upper end of the ramus of the jaw from pressing the flap and causing necrosis. The skin wound was closed, tincture of iodin applied to the wound and no other dressing was used. This operation was performed on August 6, 1916.

On August 23, 1916, a similar operation was performed upon the left side. So far as we could determine there was no involvement of any of the branches of the facial nerve following either operation.

About three weeks following the operation upon the right side there was some infection underneath the skin on that side. The skin was incised and a very slight amount of pus escaped.

The healing of the left side was uneventful. Following the operation upon the left side the teeth were held apart about one and one-half inches by the two gutta percha wedges which Dr. Fenton had placed, one on the right, and one on the left side.

It was interesting to watch the little child lie in bed, protrude her tongue, draw it in and protrude it again. It was an amusing thing to the child because she had never been able to even insert the tongue between the teeth. The mother said she had never seen the child's tongue before.

On August 30, 1916, that is one week following the operation upon the left side, Dr. Fenton removed the two wedges of gutta percha from between the teeth. At this time the patient could move the jaw nicely, so as to open the mouth one and one-half cms. The mouth could be shut tightly. The jaws could be closed so that the occlusion was fairly good. At this time Dr. Fenton began daily passive exercises, using a wedge to pry the mouth open. These exercises were continued for two months, being given daily. At this time the patient went home. The patient could open and close the mouth finely. The opening was about two-thirds that of the normal.

In connection with the operation for ankylosis of the temporomandibular articulation we would like to make one point, namely, always make the fascial flap much longer than it seems necessary in order that it may be tucked down in the wound without any tension on its attachment to the zygoma.

Case 2. Ununited fracture of the body of the mandible on the right side anterior to the angle. Healed fracture of the neck on the left side with true bony ankylosis.

H. L., white, male, fifty years of age, came under our observation on August 22, 1916, because of ununited fracture of the right side of the mandible with inability to move the mandible.

On April 23, 1916, the patient was kicked upon the right side of the lower jaw by a horse. There was a comminuted fracture anterior to the angle. This was wired at the time.

Examination showed that the fractured ends of the bone on the right side were widely separated. The posterior fragment extended laterally beyond the anterior. There was nothing about the fracture to suggest why the left side of the mandible was immobile and why the jaw was kept in the open position. Inquiry failed to reveal any history of injury on the left side.

X-ray examination: Right side, fluid in the temporomandibular socket. The margins of the fragments were widely separated. Left side, an old fracture of the neck was discovered.

With this patient we felt that we had to deal with a very difficult problem indeed. This patient had come to us because of an ununited fracture on the right side. In order to get a good result here we felt that it was necessary to bring the parts in apposition, hold them there by some appliance, keep the mandible at rest until healing took place.

We had discovered also a bony true ankylosis on the left side. In order to get a good result here we thought it would be necessary to exsect the condyle, make a fascial flap and then exercise by passive motion this new joint for a number of weeks. The matter was explained to the patient and we advised, first, the correction of the ankylosed joint. This to be followed weeks later, if necessary, by a correction of the ununited fracture.

The operation previously described was performed upon the left side. One week later, the exercise of the mandible with the wedge was begun.

One week following the operation when the gutta percha was taken out, the patient had good occlusion. The motion of the mandible was a little over one-half inch. The passive motion was continued for five minutes daily and continued for three or four weeks, at the end of which time the patient could open and close his mouth in a normal manner.

Following the exsection of the neck on the left side the pieces at the point of the old fracture were brought in fairly good apposition. Much to our surprise without any operative procedure or appliance being applied to the point of fracture and with the daily passive exercises in order to get motion of the joint, the ununited fracture healed, giving the patient a fairly good result without a second operation, to us a most unusual condition.

Case 3. A case of bilateral forward dislocation of the mandible of almost five months' standing reduced by manipulation.

The interesting thing in connection with this case is the length of time that the dislocation existed before it was reduced. The dislocation occurred in September, 1915. At that time the family physician, Dr. Doering, of Fort Madison, Iowa, wrote and stated that he had a patient with a double dislocation of the mandible and he would like to have her come for treatment right away. For some reason or other the patient postponed her visit to us until a period of almost five months. We had come to the conclusion that the patient did not have a dislocation of the mandible because we could not conceive of a patient with a condition like this not having something done to correct it.

What was our surprise when at the end of this time the patient presented herself at our office with the open mouth and all of the characteristic symptoms of a bilateral dislocation of the mandible.

Brophy[3] reports that Hay successfully reduced a dislocation after twenty-three days; A. Cooper and Stromeyer after forty-two days; Hutchinson, sixty days; Demarguay, eighty-seven days; Donovan, ninety-eight days; Milton, one hundred and fourteen days; Pollock, one hundred and twenty days; Nichor and Gosselin, one hundred and thirty days; Golding, one hundred and thirty-six days, and McGraw[4] has corrected a bilateral dislocation of four months' standing. Our patient had the double dislocation of almost five months' standing at the time of the operation.

The patient, M. R., white, female, thirty-three years of age. In September, 1915, while yawning, she found that the lower jaw remained immobile in the open position and it has remained so since. It was painful at the time and remained so for a few days. Since then there has been no pain, but the patient has not been able to close the mouth. Naturally, the patient could not bite or chew. Attempts were made to replace the dislocation before the patient came under our care, but these were unsuccessful. She presented the typical facies of a bilateral dislocation of the mandible. The inferior incisors protruded one centimeter beyond the superior.

X-ray examination: The right side shows the condyle dislocated forward underneath the zygoma in the zygomatic fossa. The protrusion of the whole mandible is nicely shown.

The patient was able to open the mouth three centimeters. Anterior to the ear was a depression formerly occupied by the condyle. The condyles could not be felt as they had slipped forward underneath the zygoma in the zygomatic fossa. Malocclusion of the third degree. No deviation to the right or left.

Operation: January 31, 1916. Ether anesthesia with a preliminary injection of morphin. Under deep anesthesia an effort was made to replace the dislocation by placing between the molar teeth a rubber wedge containing an iron core, and exerting pressure upon the symphysis upward. This was not successful. The condyles were not moved in the least.

Over the zygoma of the right side an horizontal incision through skin and fascia down to the bone. Incision posteriorly extending slightly upward, the length of the incision being two inches. The incision extended down to the bone. The zygoma was separated from the malar bone anteriorly. The posterior incision through the zygoma was made as far back as possible, using a Gigli saw. An attempt was made to leave the zygoma attached to the masseter muscle when it was turned down, but in this instance the piece of bone fell off on the floor and was lost. The masseter muscle was turned down and the condyle exposed in the zygomatic fossa. Using a wedge, and using the base of the skull as a fulcrum, applying the point of the wedge to the condyle and also exerting pressure upon the symphysis, the condyle was forced back in position.

The same operation was performed upon the left side, except in this instance the zygoma was not lost but remained attached to the masseter muscle.

When the left condyle was forced back in position the right came out of the socket. A second wedge was used to hold the left condyle in the socket and then following out the procedure as outlined above, the right condyle was again forced back in the socket.

On the left side the piece of the zygoma was placed in its proper position, sutures being placed through the periostium of the zygoma and the neighboring bone. On the right side the masseter muscle was stretched back in position and the wound closed with silk worm gut. During this time the mandible was held in position by firm pressure. A Barton bandage was now applied.

The patient made a nice recovery, having no deleterious effects from the operation or from the anesthetic. Saline and brandy were administered per rectum immediately following the operation. Six hours after the operation, water was administered through the nose by catheter. The patient was fed in this way until the Barton bandage was later removed. Four days after the operation the stitches were removed. Fourteen days after the operation the Barton bandage was removed and left off. At this time the patient had good motion of the jaws. The occlusion was perfect, at least as good as before the dislocation and the patient could open her jaws three centimeters.

The patient went home on February 25, 1916, that is, about three and one-half weeks following the operation. At this time she could open her mouth to a distance of four centimeters and mastication was excellent.

So far as we are able to determine, the method of replacing the condyle, using the wedge, is original.

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State University of Iowa.

Speech Conflict as an Etiological Factor in Stuttering. MAY K. SCRIPTURE AND O. GLOGAU, *Jour. Nervous and Mental Dis.*, Jan., 1916.

The analysis of the authors' statistics makes them conclude that speech conflict is an etiological factor in stuttering. Among 171 male patients the stuttering in 33 was apparently brought about by speech conflict exclusively; in 4 cases negligent lisping in their own language had existed. However, in 29 female patients there was only one in whom the stuttering could be attributed to this cause. The striking feature concerning the stutterers from speech conflict is the fact that the stuttering was acquired at the ages of from 5 to 7 years. In 38 cases the etiologic factor proved to be a conflict between the mother tongue at home and the English to be learned at school. P. F.

THE RATIONAL TREATMENT OF STUTTERING.

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Probably no human affliction has been more exploited by heartless charlatans than stuttering. The stutterer, eager to be helped, falls an easy victim to the numberless speech doctors with their sure cure nostrums and infallible methods. Many victims try one so-called cure after another, often spending their last dollar, and in the end are far worse off than before. Such persons if finally treated by honest, scientific methods, often prove to be hopeless cases, for they have lost faith and confidence in any cure, and have acquired a cynicism which is hard to combat. The methods, which charlatans and quack doctors have used are legion. Unnecessary surgical operations, medications and hypnotism have all been popular. Stutterers have been and still are taught to speak in unnatural voices, using sing-song, very loud tones, very high or low pitched tones, and so on. They have been taught to speak beating time, swinging the arm and nodding the head for the sake of rhythm, or clenching the fist and pinching the fingers on difficult sounds for the sake of distraction. It need hardly be said that such schemes never relieve a stutterer of anything, but his money, although occasionally one has recovered from his affliction in spite of them. It must not, however, be overlooked that in some of the methods enumerated, there are things of value, which can and should be used as part of a rational method for the treatment of stuttering.

What then is the rational treatment? What are the aims which the teacher of a class of stutterers should set up? What method of procedure should he follow? What results can he expect to accomplish? These are the questions, which we shall attempt to answer in this article.

Aims: The fundamental aim of the teacher should be to cure the pupils of their pernicious speech habits, and the bodily or facial contortions which accompany such habits, by teaching the correct habits of speech. Under correct habits of speech are included proper posture, respiration, articulation, phonation, fluency and thinking. We say the fundamental aim is to cure the defect. As we shall see later, when we discuss the results, this is an ideal we must strive for, but which, let us admit it boldly, is not in every case attainable.

Methods of procedure: First of all, every pupil should be carefully examined for organic defects in the organs of speech, and for nervous troubles which may be the cause of the speech disorder. Such examination is to be made by a competent physician and if anatomical defects or nervous troubles are discovered they ought to receive proper medical or surgical treatment. The personal and family history of every pupil is essential, and with the physician's help the case should be properly diagnosed. This diagnosis should be most carefully and thoroughly made, and a course of treatment prescribed before the actual corrective work is undertaken. It is too seldom recognized that little improvement in speech can be effected until the physical condition of the patient is well cared for. The actual correcting of the speech defect is largely pedagogic, and thus falls within the realm of the properly trained speech teacher, whose qualifications and training we shall later discuss. It is a question of habit formation; the removal of bad habits and the inculcating of correct ones. This is no easy task and requires time and infinite patience on the part of the pupil and teacher.

In our statement of the aim in treating stutterers we enumerated under correct habits of speech proper posture, respiration, articulation, phonation, fluency, and thinking. We shall discuss briefly the methods by which each of these habits may be formed.

Posture: In order to speak correctly the pupil must stand and sit correctly, in other words, he must maintain good posture. Good posture in standing does not mean the stiff, stilted attitude of a soldier, but rather a comfortable, well balanced position. The chest should be neither unduly protruded nor hollowed, but held so that the air may be freely inhaled and exhaled without straining or difficulty. The head should be at perfect right angles with the body, the chin being neither tilted nor depressed. In sitting the pupil should not be permitted to slide down in the seat until he rests on the edge of his spine, nor to bend forward so that the back forms a bow. He should sit up straight with his back resting comfortably against the back of the seat.

Above all things, both in standing and sitting, the pupil should be perfectly relaxed. A cramped muscle, straining or stiffness in the fingers, arms, neck, face, or any other part of the body, indicates a useless expenditure of nervous energy and interferes with speech.

It is perfectly obvious that cramping or straining of the speech organs such as the lungs, larynx or lips will interfere with speech. Straining or cramping of any muscle will have the same effect, for the speech organs are extremely sensitive and easily affected by bodily conditions. Moreover, stiffness and cramping of the muscles indicate that the mind itself is not at ease. The pupils should be taught to strive for relaxation of both body and mind. Space does not permit us to enumerate exercises for relaxing the various parts of the body. We shall only mention one, namely, stretching and yawning, which ought to be gone through at the beginning of every lesson. For obtaining relaxation of the facial muscles, the pupil should observe himself in a mirror. He soon learns to smooth out the wrinkles in his forehead or to remove the scowl from his face, if he but observes himself in the glass.

Breathing: While improper breathing cannot be assigned as the cause of stuttering, it is certainly a concomitant of it. It must, therefore, be corrected. The breathing exercises for stutterers are divided into two kinds; deep breathing (artistic breathing) exercises for increasing the lung capacity, broadening out of the chest and strengthening the muscles of respiration, and exercises for breath control in speaking. The two must not be confused. In the former we take in and expel as much air as possible. In the latter we take in a little more air than in ordinary breathing and do not attempt to exhaust it. The teacher must see to it that the breath is inhaled in a natural way, deeply but without straining or forcing.

There are numberless varieties of good deep breathing exercises with which every teacher is acquainted. It matters not which of these are used, if they are performed properly. For gaining breath control the pupil should be taught first of all what we shall call the speaking breath, namely, *inhale quickly and deeply, and without straining with the mouth slightly open. Exhale slowly through the open mouth.* The air should make no noise either when inhaled or exhaled. The purpose of the speaking breath is not to fill the lungs to overflowing, but to get enough air for speaking. It is taken with the mouth open because that is the easiest, most relaxed, quickest way. In speaking we do not close the mouth every time we wish to inhale. After the pupils have learned the speaking breath they should practice exercises of the following nature:

Say a vowel on the outgoing breath and hold it as long as the breath lasts, without straining.

Say a vowel two, three, four, five and six times on one breath, with pauses of various lengths between them.

Count as far as possible on one breath.

Say the alphabet as far as possible on one breath.

Say sentences on one breath, gradually increasing their length.

Say long sentences which require one or more helping breaths, to reinforce the original breath.

The stutterer must be taught to breathe consciously when speaking until right breathing becomes a habit.

Phonation: Most stutterers phonate improperly, in that their voices lack flexibility and they speak in a monotonous tone. If the stutterer can be taught to speak with the proper inflection, he will as a rule speak with greater facility. At first it is well to exaggerate the inflections, for there is little danger that this will become a habit. Besides a little more emphasis on inflection, even among people who speak normally is very desirable. Singing scales, arpeggios and songs, thorough drill in vowels, exercises in speaking and reading with special attention to intonation and melody, lead to good results with stutterers.

Articulation: By means of tongue and mouth gymnastics the pupils should gain conscious control of the organs of articulation, the jaw, the lips, tongue, and soft palate. They should be taught the exact position of the speech organs for each vowel and consonant. Each sound should be drilled first by itself, then in words and finally in sentences. It is necessary to constantly emphasize the fact that the vowel is the most important part of every word, and must be lengthened and strengthened. Vowel drills correctly done are a most important factor in the therapy of stuttering.

The consonant should be pronounced correctly but lightly. Pupils should be taught to distinguish between the voiced and the voiceless consonants, and to produce either at will. Final consonants should be carefully enunciated and all syllables given their full value, so that accurate and distinct speech may be obtained.

Fluency and thinking: If the stutterer is taught to breathe properly, to inflect carefully and above all to lengthen and strengthen his vowels, he will soon learn to read and repeat sentences and poems with smoothness and facility. When, however, he must speak spontaneously, he finds great difficulty, and quickly reverts to his old habits. This is due to lack of confidence in himself and to the *fear* that he will not speak correctly. It is necessary to increase the pupil's confidence in himself, to eliminate if possible this fear. He must be convinced that he can speak properly. A carefully graded series of exercises must be provided for this purpose. At first very little spontaneous work should be demanded of the pupils. They should read and repeat sentences and poems, first together with other pupils, and then alone. Speaking together with one or more persons affords the pupil moral support, which he needs greatly, and under these circumstances he rarely stutters. The next step is reading sentences in which words are to be supplied, completing sentences, forming sentences containing a number of given words, and similar exercises, whch requre a certain amount of spontaneous thinking on the part of the pupil. Then comes the answering of simple questions based upon topics of general knowledge, or upon stories, fables, anecdotes and poems which have already been read; and finally the retelling of stories, talking from topic and argumentation. Allowing individual pupils to direct class exercises instead of the teacher is a good means of creating confidence.

Exercises in rhythm of various kinds are a most valuable aid in obtaining fluency of speech. Proceeding from rhythm in music to rhythm in poetry, the pupil should be finally led to appreciate and use the rhythm which is found in everyday speech.

Results attainable: As has been stated, the cure of the stutterer should be the ideal for which every teacher should strive. The teacher, however, must bear in mind, that it is not possible to cure every stutterer, or he will be doomed to disappointment. We may safely say that most cases if properly treated early enough can be permanently cured, and that all cases can be alleviated. It is perfectly obvious, that the longer the defect is permitted to go uncared for, the more stubbornly will it resist treatment.

Young children yield easily to such treatment as has been outlined in this article. Their minds are plastic, they imitate easily, for neither their speech organs nor their habits of speech are set. They find actual delight in speech exercises provided they are sufficiently varied. Above all, they have not acquired the mental attitude of the adult stutterer, nor the fear which is such an important factor in his psychology. The child is ordinarily not afraid to speak, but finds pleasure in self-expression. It is only the ridicule of his companions which in time drives him to silence and morbid introspection. When he becomes ever conscious of his defect, when he acquires an unreasoning fear of certain sounds, words or situations, the difficulty of treatment increases enormously.

The problem with many young stutterers is, therefore, to inculcate proper habits of speech, before fear has become an integrate part of their nature, and before their abnormal speech habits have become fixed. The mind of the adult stutterer is no longer plastic and his abnormal speech habits have through long usage become firmly established. He has acquired that unreasoning fear of certain sounds, words and situations which the child as a rule lacks. Many a stutterer who has to all intents and purposes been cured, will confess that at times this fear recurs in his mind, and while he knows it to be irrational, he cannot for the moment rid himself of it.

Is then the case of the adult stutterer hopeless? By no means. A carefully graded series of exercises for increasing confidence as suggested under the heading, "Fluency and Thinking," will help to remove this fear, partially if not entirely. These exercises must be extended beyond the class room. The teacher should take his pupil out upon the street, and have him ask passersby or policemen the way to certain places. Under the teacher's supervision the pupil should telephone, order things in stores, inquire for information at the railroad station, and so on, so that he may acquire the ability to speak properly in all sorts of situations.

If, however, fear stlll persists neither teacher nor pupil need be discouraged. The stutterer's case may be compared to that of a man who must enter a forest infested with dangerous animals. Previous experiences in that forest have instilled in him an irradicable fear He is no coward, yet he hesitates to enter; but provide him with a suitable weapon such as a gun, he will seize it firmly and bravely enter the forest. He may still feel a sinking in the region of the stomach, or his heart may beat a little faster, but he enters and gives a good account of himself if he meets a dangerous animal. The stutterer, too, has had experiences in speech which have instilled in him a fear of certain sounds, words and situations. The rational treatment herein outlined, provides him with weapons to combat his enemy, fear, wherever he may meet him. When an old difficulty in the shape of a refractory sound bobs up in his path, he grasps his weapon firmly, and attacks boldly. In his case the weapon is not a gun but a mastery of the psychology and physiology of speech. His ammunition is not bullets, but a conscious knowledge of correct breathing, vowel and consonant formation, phonation, inflection and so forth, which has helped him before, and will help him again. The fear may be present, yet he will speak quite fluently and well.

In conculsion, we must emphasize the following points, and mention Ten Commandments of Speech, which we have found most helpful.

1. There is no royal road to the correction of stuttering. It requires long and patient treatment on the part of the teacher and hard, conscientious work on the part of the pupil.

2. If properly treated at an early age, most stutterers can be permanently cured.

3. The longer a case has been permitted to go uncared for the more difficult will it be to eradicate the defect.

4. Adult stutterers may in many cases be cured and practically all cases may be so alleviated, that the patient can get along quite well in the ordinary affairs of life.

5. Only such stutterers who have rid themselves of fear, be it the fear of word, sound, or situation, can be said to be permanently cured.

The Ten Commandments of Speech: 1. Say to yourself, "I have no fear. I know that I can speak well."

2. Think before you speak!

3. Always speak quietly and calmly, with all the muscles relaxed.

4. Always speak slowly and carefully.

5. Stand and sit quietly and erect when speaking.

6. Before speaking inhale quickly, deeply and without straining, with the mouth open.

7. Be very careful of the first two words in each sentence.

8. Always lengthen and strengthen the principal vowels.

9. Be especially careful to lengthen the short vowels.

10. Be honest with yourself. Do not try to avoid words that you think difficult.

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REPAIR OF THE TYMPANIC MEMBRANE IN PERFORATIONS OF LONG STANDING.

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The object of this article is to report a series of cases, which have been treated for persistent perforation of the membrana tympani, by the Okuneff trichloracetic acid method. The closure of the perforation, in practically every case, has been undertaken not so much for the purpose of improving the hearing, as of stopping repeated attacks of otorrhea. Many of the patients were recent arrivals from the United States, where they had been living in a comparatively dry climate; and in most cases had had no discharge from the ear since the onset of the trouble which produced a "broken ear drum." The climate of China, and especially Shanghai, on the other hand, is extremely damp, which undoubtedly has been instrumental in producing changes, so that in some cases practically every attack of rhinitis brought on a discharging ear. Be that as it may, the fact remains, that people who had had no trouble with an old perforation before coming to China, began almost immediately after arrival to be bothered with the ear.

With the earlier cases some of the other methods for closure, such as silver nitrate, incision of the edge of the perforation, thin pieces of paper applied after Blake's method, etc., were tried, but without success. Encouraged by Okuneff's statement that 80 per cent of the perforations could be closed with trichloracetic acid, all the cases were immediately treated by that method. A 10 per cent solution of cocain was first applied to the perforation for a few minutes, and then the edge of the perforation was touched with a very small cotton probe wet with a saturated solution of trichloracetic acid. A white eschar forms where the acid has touched, so there is no doubt as to the success of the application. Care should be taken, however, to wipe away all the cocain from the drum before applying acid, as the two combine and form a white precipitate. This interferes with the cauterization.

This series comprises some fifteen cases in all. A few of them only will be selected to illustrate this method, and the results of treatment:

Case 2. A child, eight years old, with a running ear of two years' standing. An examination of the ear drum showed a small oval perforation centrally placed, just in front of the lower end of the malleus. The discharge was not constant.

Treatment consisted in first removing adenoids. The discharge stopped in two weeks' time, but the perforation still persisted. Three weeks after the operation the first application of acid was made, and followed in five days by a second. The perforation was closed at the end of a week without a third application. Examination two years later revealed a normal ear drum. Hearing was improved in this case.

Case 5. Patient, a man 29 years of age with both ear drums perforated. The right ear dated back ten years to an attack of otorrhoea, since which time there had been no discharge until his arrival in China. The left ear drum had been injured by an accident in early childhood and was divided into an upper and a lower half by a long oblong perforation. The right ear drum presented a large central perforation with a polypus protruding into the external canal.

At first an attempt was made to close these perforations by Blake's paper-splint method and just at first there was a reduction in the size, but after a while the improvement stopped entirely. Trichloracetic acid was then used with the result that after twenty applications covering a period of seven months the right ear drum was closed, and after eight applications covering three months, the left ear drum was closed.

Since the left perforation was the larger and of longer standing it is of interest to note that it was the first to close. One year after closure, the right ear drum burst, as a result of the nose being blown violently, and almost immediately became infected following a head "cold." The perforation was subsequently closed, however, after a dozen applications covering a month and one-half. The left drum remains firm. Hearing is considerably improved.

Case 7. Patient, a woman thirty-five years of age with a discharge of several months' duration from the left ear. A large, round perforation was found just below the long process of the malleus.

The discharge was first stopped after thoroughly opening up the Eustachian tube by politzerization, and by forcing air through the tube through the tympanic cavity with a Siegle otoscope.

The perforation was closed after twenty treatments covering a period of four months.

Case 8. Patient, a man eighty-nine years of age, with a perforation of thirty years' standing. He frequently had a little discharge but thought nothing of it, and came for treatment only that his hearing might be improved. Examination of the right ear drum showed a large kidney shaped perforation in the posterior half of the drum. A watch could be heard if placed against the ear.

Thirteen treatments were given covering a period of five months, when the patient was compelled to leave Shanghai. The perforation was considerably smaller than when the treatments were begun. On the patient's return three months later there was still further reduction in the size of the perforation. Twenty-three treatments covering a period of four months were sufficient to close the perforation. The hearing was remarkably improved in this case. This perforation was subsequently re-established, and is under treatment at the present time.

Case 14. Patient, a young woman of twenty-six years, with a perforation which she had had for eighteen years. She wished the perforation closed because of a slight otorrhea produced by diving.

Examination showed an oblong perforation just below and posterior to the long process of the malleus. A small adhesion bound the end of the long process down to the posterior wall of the tympanic cavity.

Treatment consisted in first destroying the adhesion, and cauterizing with acid. Thirty-three applications of the acid were made, covering a period of seven months, before the perforation was closed.

The above brief statements suffice merely to show the character of the conditions, the length of time treated, and subsequent results. In treating this series of cases a number of interesting points have been observed.

Gomerz's method was to use the saturated solution of trichloracetic acid and to repeat the cauterizations at intervals of from four to eight days. The exact time which should elapse before repeating a cauterization should be determined, however, only after a careful study of each individual case. Two important factors should be taken into consideration in making such a decision: First, the amount of scar tissue which makes up the edge of the perforation; and second, the vitality of the ear drum itself.

The amount of scar tissue cannot always be determined at first. A great deal can be learned, however, from the appearance of the perforation, and from the history of the case. Having determined as far as possible the amount of resisting scar tissue present, the frequency of cauterization should be regulated by the rapidity with which this tissue is destroyed and granulating tissue secured for the entire circumference of the perforation. Treatment every third or fifth day has worked out best in most cases of this series. Observation has shown that a perforation will not begin to close until there is an entire circle of granulating tissue. Hence, scar tissue which is preventing the growth of granulating tissue must first be destroyed before one can hope to close a perforation. This should be considered the first stage in the treatment.

Early in the treatment of this series it was observed that a great many cauterizations of the cases of long standing had to be made before there was any improvement. Furthermore, it was noticed that when a perforation had started to close, the growth was very rapid. All perforations, when they begin to close assume a more or less circular shape, no matter what the previous shape has been. This would substantiate the above statement that in order to close a perforation there must be granulating tissue covering the entire edge.

The next important condition which had to do with the closure of a perforation is the health of the drum tissue. In two cases of the series the membrane had become so thin in the part immediately surrounding the perforation, that no growth of new membrane could be started until the perforation had been made much larger by destroying this membrane and a firm base given for growth.

The vitality of the drum membrane should regulate also the frequency of cauterization after the scar tissue has been sufficiently destroyed to produce granulations. This should be considered the second stage of treatment. Each individual case must be studied and the frequency determined by the reaction produced. At times it has been found necessary to use weaker solutions of acid, as the saturated solution apparently destroyed the new tissue. It has been found in these cases that cauterization during this stage of treatment should be from a five to a seven days' interval.

The tendency probably has been to cauterize too frequently. In one of the earlier cases, treatment had been going on for well over a year without any perceptible decrease in the size of the perforation. Cauterizations had taken place on an average of once every two weeks. The patient was obliged to leave town for a month and when he returned the perforation was about half the size it had been previously. In three other cases of this series the perforations closed after cessation of treatment, while the patients were on vacation, or after they had been compelled to return to their stations.

The above experience has taught us to cauterize less and less frequently during the last stage of the treatment and in some cases to stop treatment entirely and watch the result.

The size of the perforation has not influenced the final result, though it has in some cases made a difference in the duration of the treatment. Neither has the age of the patient materially influenced closure. The only factor which seems to interfere with a successful treatment is the entire absence of a definite drum membrane at some point in the circumference of the perforation.

Not only has the hearing been considerably improved in practically every case, but there has been no tendency for the tympanic cavities to become inflamed during subsequent attacks of rhinitis. The cushions of air, which nature has provided, having been reestablished in the Eustachian tube and tympanic cavity, there is no longer a tendency for the byproducts of rhinitis to pass easily into the Eustachian tube whenever the nose is blown.

The history of some of these cases would seem to indicate that no attempt had been made to close perforations following a severe otitis media. after the discharge had stopped. There are undoubtedly individuals in the United States as well as in China who would be saved the inconvenience of repeated attacks of otorrhea if, following such attacks, it could be made absolutely certain that the perforation had closed.

Harvard Medical School of China.

The Importance of the Post=nasal Space as a Focus of Infection in Infants and Young Children. George E. Baxter, *Illinois Med. Jour.*, July, 1916.

The author points out that the post-nasal space is an important atrium for general infections in infants and young children. Complications equally severe as those resulting from faucial tonsil infections may occur; he emphasizes the necessity of urinalysis in infants and young children suffering from infections of the upper respiratory tract. He reports two cases of hemorrhagic nephritis resulting from post-nasal infection.

P. F.

A CEREBRAL COMPLICATION OF ACUTE MASTOIDITIS WITH VERY SUDDEN UNUSUAL SYMPTOMS.

Dr. W. T. Patton, New Orleans, La.

The writer does not in this paper wish to give the impression that he considers cerebral complications rare in mastoid involvement; in fact, they are rather common. However, it has been impossible to find any record of a case developing so suddenly and with such severe onset as the one to be reported. In looking over records in the Charity Hospital of Louisiana I was able to find in the past seven years, records of seven cerebral abscesses from various causes; all the patients died either before or after operation. Two other cases I saw in other hospitals of the city; both died. Dr. J. W. Murphy,[1] of Cincinnati, reported five cases seen by himself in one year, all following suppurating ears. In all of these cases the abscess was found either at operation or post-mortem. This is certainly a large number of cases for one man to see in such a short time when we consider that the records in the large Charity Hospital show only seven cases recognized in the past seven years. In speaking to a number of surgeons and otologists very few have seen more than one case of cerebral abscess and a number of the busy surgeons have never seen a case.

The portion of the brain most likely to be involved from middle ear infection, depends often upon the manner in which the infection gains entrance. When it occurs by direct continuity, the temporo-sphenoidal lobe is most often the seat of abscess. When the extension is through the labyrinth the abscess is most often on the anterior aspect of the cerebellum. Since abscess of the brain of otitic origin is a secondary and not a primary disease, the problem of diagnosis is often masked by the primary disease or some of its complications. Quite a large extradural abscess may be present with little or no symptoms. A cerebral abscess of otitic origin, being an acute infection, the time is generally too short for the pathognomonic eye symptoms to develop, as in the case of tumors of the brain. Hence, the absence of optic neuritis does not exclude cerebral abscess.

It will hardly be necessary to mention here the symptoms of brain abscess, as the normal or subnormal temperature, slow pulse, slow respiration, slow cerebration and want of sustained attention, mental

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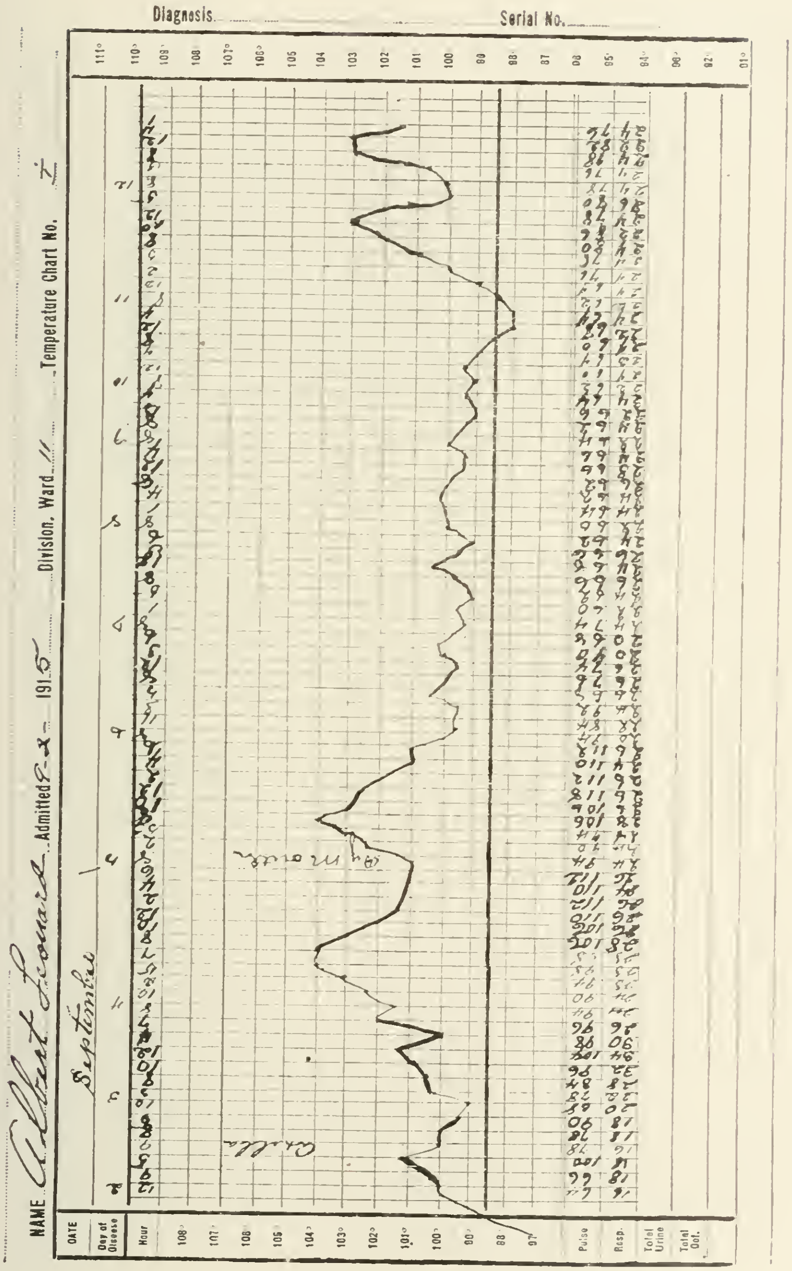
[1] The Laryngoscope, Oct., 1915.


Diagnosis
Serial No.
NAME Albert Leonard
Admitted 9-2- 1915
Division, Ward 11
Temperature Chart No. 1
September
Chill
By mouth
DATE
Day of Disease
Hour
Pulse
Resp.
Total Urine
Total Out.

obscuration, and tendency to doze, are too well known to all. Often, however, we may have abscess with very few of the above symptoms, and these are the cases that give us most trouble.

When the abscess is in the cerebellum, the respirations are much slower than when in the temporo-sphenoidal lobe, are more apt to be irregular and of the Cheyne-Stokes character.

As to the treatment, once a diagnosis is made the only treatment is incision, and the sooner the better. As to the method of incising there is some difference of opinion. Some men use a long cataract knife claiming that because of its thinness there is a minimum amount of trauma and because of its sharpness it readily pierces a tough capsule. Others use a blunt grooved director. Should there be a sinus showing pus, the encephaloscope is very useful. Once the abscess cavity is reached, it can be more freely opened by means of a fine artery forceps. Then some form of drainage tube or silk worm gut is put in. One should be very careful in irrigating the abscess cavity. The author prefers not to irrigate.

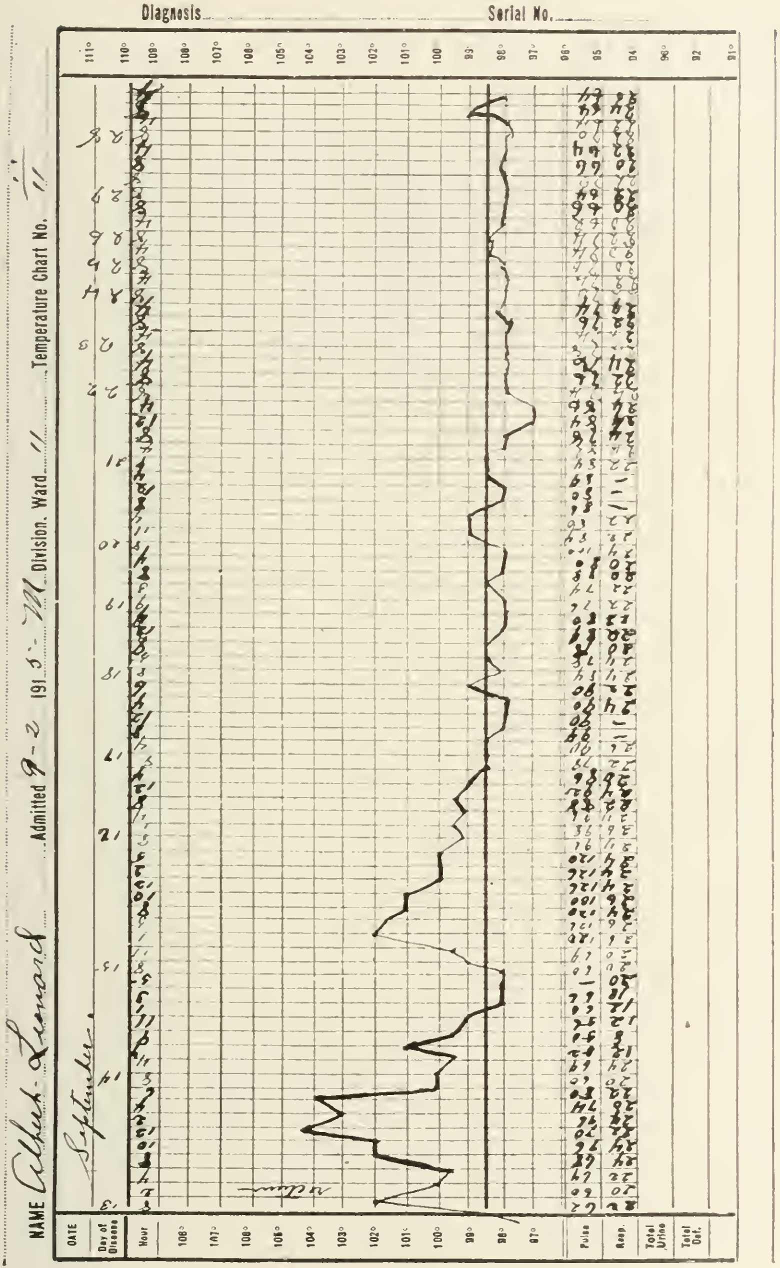
The case I am about to report seems unusual both in method of onset and recovery. I hope some one with more experience will clear up several points which are still obscure.

Albert Leonard, white, married, age 28, was admitted to the surgical service of the Charity Hospital, New Orleans, September 2, 1915, with the following history:

Family history: Negative.

Past history: Smokes moderately, does not drink, never was sick before, with exception of "chills and fever;" denies all venereal history. Married eight years and has three healthy children. Occupation, farmer.

Present illness: On the morning of September 1, about 7 o'clock, while driving the cows, he was suddenly attacked with a violent pain in his right ear; this continued all day. Patient used a hot water bottle to his ear and hot sweet oil in the ear with no relief. The same night about 7 o'clock, the ear began to discharge and the pain became much less severe. The patient was quite restless and drowsy. About 10 p. m., his wife states that his left hand and arm began to "jump," then the leg on the same side became similarly involved, and before morning there was paralysis of the entire left side. Pain still continued over the right side of the head. The patient was brought to New Orleans September 2, and admitted to the surgical ward of the Charity Hospital. I was first called to see the case on September 3, about 4 p. m. On examination I found the patient very drowsy, answering questions very poorly and


NAME Albert Leonard
Admitted 9-2 1915 M Division. Ward 11
Temperature Chart No. 11
Diagnosis
Serial No.
DATE
Day of Disease
Hour
Pulse
Resp.
Total Urine
Total Def.
September

slowly. The right ear canal was full of sero-sanguineous fluid. Tympanic membrane bulging; posterior superior canal wall sagging. Only slight tenderness over mastoid; no edema. Entire left side paralyzed, with occasional twitching of muscles. The right pupil was dilated, not reacting to light and the eye was turned out; at this time the eye grounds were only slightly congested. Nose. throat and left ear normal; temperature 100°, pulse 78.

A diagnosis of brain abscess was made and operation advised. A neurologist examined the case and agreed with the diagnosis.

Blood count, September 3: *White cells,* 22,590; *lymphocytes,* 10; *neutrophiles,* 90; *Wassermann,* negative. Smear from the ear showed staphylococcus aureus, also a gram negative and a gram positive bacilli. The case was then transferred to my service. Mastoidectomy was performed on the morning of September 3. A very small amount of pus was found in the aditus; no necrosis. Dura or sinus not exposed. As the mastoid involvement did not account for the symptoms, the incision was extended up and the skull trephined one and one-half inches above and one-half inch posterior to the external auditory canal. A piece of bone the size of a silver dollar was removed. The dura seemed healthy; no apparent bulging and no pulsation. I incised and explored the brain in three directions with a cataract knife to a depth of about one and one-fourth inches, but found nothing. The wound was closed and the patient returned to the ward.

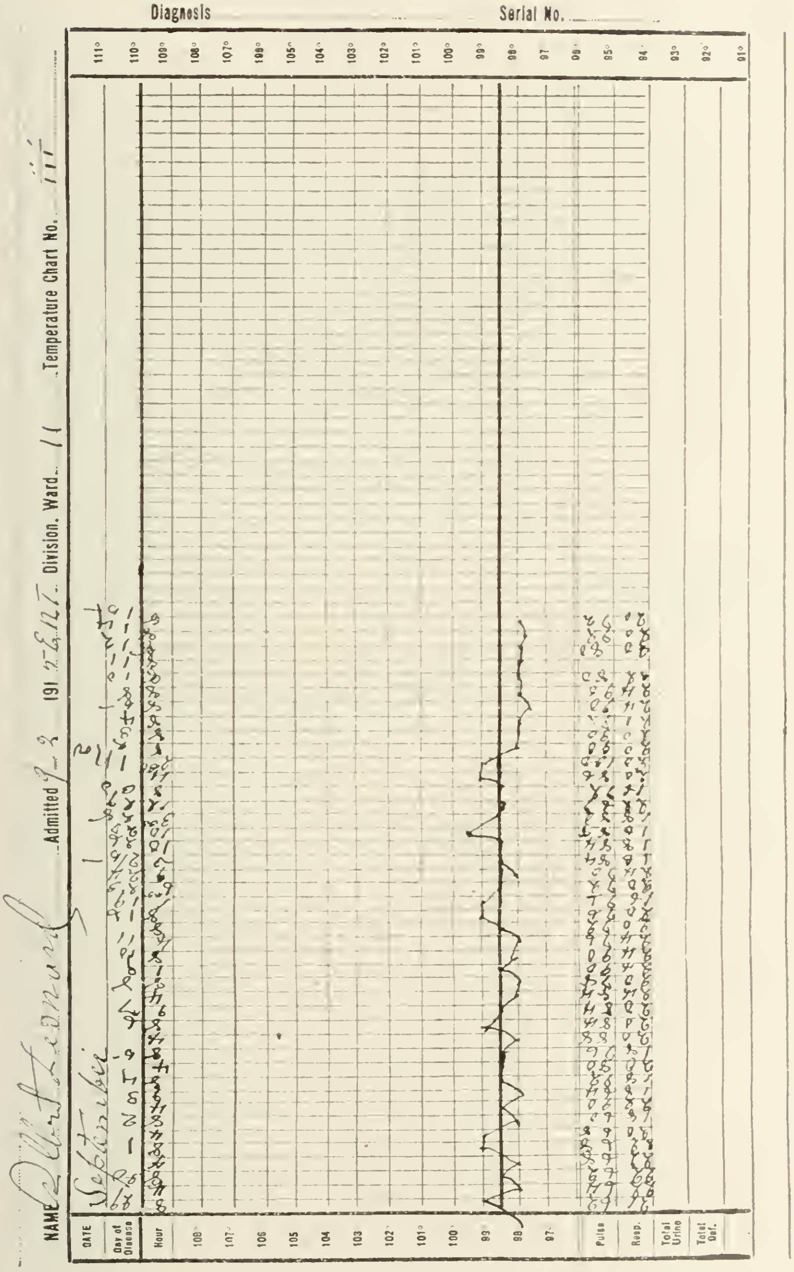
September 4: Patient much improved. Paralysis almost entirely gone, mind seemed clear and bright and patient stated that he felt fine.

September 6: White count, 18,000. Patient continued to do nicely. Temperature, 100; pulse, 76.

September 9: White count, 28,300. Patient passed a bad night. Respiration very bad according to nurse (Cheyne-Stokes breathing). Paralysis again of the entire left side. Patient unconscious and in very serious condition. Temperature, 99; pulse, 66. Again taken to the operating room, more bone removed, higher up and lower down, and brain explored in six different directions, through two incisions in the dura. No pus found. I was afraid to attempt any more cutting of the brain. It seemed useless.

September 10: To my surprise I found the patient again greatly improved; paralysis less but not entirely gone. White count, 22,280. Temperature, 99; pulse, 64.

September 12: Wound clean, patient continued to improve. White count, 20,800. Temperature. 100: pulse. 78.


NAME
Admitted
191
Division. Ward
Temperature Chart No.
Diagnosis
Serial No.
DATE
Day of Disease
Hour
108°
107°
106
105
104
103
102°
101°
100°
99
98
97°
Pulse
Resp.
Total Urine
Total Def.
111°
110°
109°
108°
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97
96°
95°
94°
93°
92°
91°

September 23: Paralysis less. White count, 11,900. Up to this time the wound was clean. I now noticed considerable pus coming from the opening in the dura. It will not be necessary to give further history, except to say that the patient continued to improve, the blood count gradually going down to 6,000; temperature, normal; pulse, 80.

November 1: There appeared three small cerebral hernias though the line of incision, corresponding to the three incisions in the dura. I was able to get rid of part of the hernia. However, one the size of a hen's egg, persisted.

November 26: Under local anesthesia, I succeeded in transplanting a piece of fascia lata, stitching it to the dura, then closing the skin incision. The wound healed by first intention. The patient left the hospital on January 3, able to walk and use his arm very well. I am sure he will eventually get entire use of the left side.

BLOOD COUNTS.

	Sept. 3	Sept. 6	Sept. 9	Sept. 10	Sept. 12	Sept. 15
White	22,590.	18,000.	28,300.	22,280.	20,500.	16,300
Small lymphocytes	10.	8.	8.	9.	1.	3.
Neutrophiles	90.	86.	91.	88.	87.	85.
Large lymphocytes		5.	1.	2.	11.	12.
Eosonophiles		1.		1.	0.	0.
Basophiles					0.	0.

	Sept. 16	Sept. 17	Sept. 18	Sept. 23	Oct. 27
White	18,050.	13,000.	19,700.	11,900.	12,552
Small lymphocytes	1.	5.	1.	4.	
Neutrophiles	83.	79.	84.	70.	74.
Large Lymphocytes	0.	16.	15.	26.	26.
Eosonophiles	0.	0.	0.	0.	
Basophiles	0.	0.	0.	0.	

Urine September 18. Few hyaline casts.

Culture from mastoid and external ear canal September 10, 1915; staphlococcus aureus and few gram positive and negative bacilli.

Conclusions: 1. Note the suddenness of onset. I was particularly careful and could find positively no history of previous trouble in either ear. Patient and wife both stated positively that he had never had any previous trouble with his ears.

2. The amount of cutting from which the brain will recover.

3. In what way if not by abscess can we account for the symptoms? No pus was ever found.

4. Remember that the wound was clean for several weeks after the last operation, then suddenly it began to discharge pus. Could the abscess have worked its way out through one of the incisions?

In concluding I should like to than my internes, Dr. Gerster and Dr. Zengel, for their help in making blood counts and other examinations.

1109 Maison Blanche Building.

SAFETY-PIN IN LARYNX; PERI-LARYNGEAL ABSCESS TREATED FOR DIPHTHERIA.*

Dr. H. L. Lynah, New York City.

Albert H., age 7 years, was admitted to the Willard Parker Hospital from Bellevue Hospital on December 21, 1915, with a history of laryngeal diphtheria of four days' duration. On admission to the hospital the child was examined by Dr. Whitcher, of the resident staff, who reported no visible exudate on the tonsils, nor any nasal discharge. The larynx was not examined. There was marked croup and retraction, but intubation was not considered necessary. A dose of 20,000 units of antitoxin was administered and the larynx was poulticed. No Schick test was made. The temperature on admission was 103°, pulse 140, respirations 36. The temperature rose to 104.4° after the antitoxin injection, but returned to normal on the third day. The "croupy attacks" still persisted. The patient remained in the hospital for a period of seventeen days, and was treated with stimulating expectorants. No one thought it necessary to notify me of the persistence of the "croupy cough" and after a series of consecutive negative cultures the child was discharged on January 6, 1916.

On January 28, 1916, the child was admitted to Kingston Avenue Hospital in Brooklyn suffering with measles and what was supposed to be laryngeal diphtheria and a second dose of 10,000 units of antitoxin was administered. Dr. W. T. Cannon, the resident physician, on making rounds shortly after the admission of the child, noted that the cause of the persistent dyspnea was due to a large pointing peritracheal abscess. On incising the abscess a large amount of pus was evacuated, followed by an expiratory cough through the wound and on inspiration the remaining pus was aspirated, which increased the dyspnea and the boy became markedly cyanotic. As it was evident that the tracheal rings had sloughed through from the long standing abscess, Dr. Cannon rapidly introduced the tracheal dilators into the wound and was on the point of inserting a tracheal canula when he saw a bright, shining foreign body in the tracheal fistula suddenly disappear, before he could grasp it with forceps, and fall downward into the lung. He then introduced the tracheal canula and the dyspnea improved but the cough still persisted. After the introduction of the canula considerable pus was coughed out. The following day owing to aspiration of pus about the canula even though the wound was packed off the tracheal tube was removed and a 6-7 O'Dwyer intubation tube introduced which passed below the tracheal fistula. The abscess cavity and tracheal wound were now loosely packed with plain gauze. The following day I saw the child, with Dr. Cannon, and from the history obtained decided to make a bronchoscopic examination, no x-ray picture having been made.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 22, 1916.

The child was in fairly good condition, but suffering with a persistent cough. There were a few scattered subcrepitant rales over the upper lobe of the right lung with slightly diminished respiratory murmur over this area. Dr. Regan thought there was an area of pneumonia in this region due to the foreign body and aspiration of pus. The temperature was 101.6°, the pulse and respirations increased. On removal of the intubation tube through the direct speculum the larynx was seen to be partly filled with granulation tissue, and presented the appearance not unlike the picture of the larynx as seen in a case of chronic stenosis following diphtheria. The 5 mm. bronchoscope of Dr. Jackson was passed and the trachea was noted to be edematous on the anterior wall at the site of the tracheal slough and covered by granulation tissue. On locating the carina the tube was passed into the right bronchus and just opposite the orifice of the superior lobe bronchus a bright, shining foreign body was seen and recognized as a safety pin with the keeper end presenting. The ring end of the pin was well down in the stem bronchus. The keeper was grasped gently with the side curved mosquito forceps of Dr. Jackson and nursed into the lip of the bronchoscope to see whether or not the pin was open. The pin was easily turned and found to be closed and removed, the bronchoscope being removed at the same time. The actual duration of the removal required four minutes; no anesthetic was used. The abscess cavity healed within two weeks and the child was discharged from the hospital cured.

The interesting points in this case are: That a foreign body impacted in the laryngo-trachea was diagnosed as laryngeal diphtheria in Bellevue and the Willard Parker Hospitals and treated as such in the latter hospital, and some weeks later when admitted to the Kingston Avenue Hospital, after having received a second injection of antitoxin for laryngeal diphtheria, was finally recognized as a foreign body, sloughing through the trachea, by the resident physician after he had opened a peri-tracheal abscess which he recognized as the cause of the dyspnea; that there was no anaphylactic shock following the second injection of antitoxin six weeks later, nor was there any antitoxin rash following either injection; that the child made a perfect recovery and has a normal speaking voice.

I have gone on record more than once in saying that any slowly progressive dyspnea should be looked upon with considerable degree of apprehension and when you cannot account for the cause of the dyspnea a direct laryngeal and bronchoscopic examination should be made. Had this rule been followed the child would have been readily relieved of the discomfort caused by the sojourn of the foreign body during a period of six weeks.

127 West Fifty-eighth Street.

The Combination of Local and General Anesthesia, and the Use of Adrenalin. Dr. D. J. Gibb Wishart, *Canadian Practitioner and Review,* January, 1916.

This article formed part of a symposium upon anesthetics. The writer protests against the increasing tendency to perform nose and throat operations under general anesthesia, and prefers the abolition of the shock by the use of morphia combined with atropin, and in selected cases, hyoscine, followed by careful packing of the nose with equal parts of a ten per cent solution of cocaine and a 1 to 1,000 solution of adrenalin, one hour before operating. He refuses to accept the placing of the blame for deaths occurring where local and general anesthesia were combined, upon the local anesthetic, in the absence of post-mortem examination by trained pathologists. Nor has he seen a death where a highly-trained anesthetist was employed. The peril lies in the use of adrenalin. A lengthened reference is made to the observation of Levy upon the action of adrenalin and chloroform and ether. Adrenalin should never be injected during the course of a general anesthetic. It requires the most highly-trained anesthetist to administer the anesthetic in nose and throat cases, which are the cases, in nearly every instance, where the combination of local and general anesthesia are required.

Wishart.

A CASE OF HEMIPLEGIA OCCURRING IMMEDIATELY AFTER TONSILLECTOMY UNDER GENERAL ANESTHESIA.*

Dr. William A. Scruton, New York City.

The subject, who was a patient in the Manhattan Eye, Ear and Throat Hospital, is a female child, 11 years old. Inquiry into her past history develops no etiological factor bearing on the complication of tonsillectomy about to be considered. Her appearance on admission to the hospital was that of one in perfect health. The result of the anesthetist's examination of the chest was negative.

Tonsillectomy was performed July 10, 1915, according to the method recommended by Sluder with a modified Mackenzie tonsillotome. In this instance the technique was not observed to a nicety and a small portion of the gland remained at the base or lingual extremity of the left fossa. Removal of this portion was effected by means of a grasping forceps and a Mosely snare.

The exact time of the onset of the hemiplegia (left side) is in doubt. The first record of the condition is at six o'clock on the morning of July 11, when the child was requested by the nurse to leave bed and was found unable to move. The patient was reasonably certain that the paralysis existed when she recovered from the anesthetic.

The temperature chart shows a tracing which made a gradual rise to 101.8° forty-eight hours following operation; the return to normal was also gradual and extended over a number of days. It is recorded on the chart that during the early hours of the second day after operation the patient was restless and noisy. On a few occasions, complaint of slight headache is recorded.

Recovery from the paralysis was definitely under way within seventy-two hours. It began in the leg and shortly afterwards was manifest in the arm. In about two weeks she began to try locomotion about the ward and on July 28th, when discharged, walked from the hospital without assistance.

I have not consulted the literature on the subject, but in the nine years that I have been connected with the Manhattan Eye, Ear and Throat Hospital, where several thousand tonsillectomies are performed each year, there has been no similar case.[1]

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 22, 1916.

In conclusion, I will endeavor to offer solution of two problems which naturally come to mind in connection with this case; namely, "What happened?" and "Why did it happen?"

The paralytic symptoms manifested must have been due to either brain pressure or brain softening; with this as a premise, a differential diagnosis is required between cerebral hemorrhage, embolus and thrombosis. The question of thrombosis may be eliminated at once because there are always prodomal signs and furthermore it does not occur at the age of this patient. Hemorrhage might have been caused by straining and excitement at the time of taking ether, or by the strain of the vomiting of ether recovery; those who had this phase of the case under observation, agree that these factors were not prominent. Regarding embolus there is a definite factor of causation in the opening of the vessels at operation. Considering the symptoms:—as against hemorrhage, there was no coma, which surely would have been present if sufficient pressure had developed to cause complete hemiplegia; there was no immediate subnormal temperature followed by a slow rise to 102°; there was rapid recovery of function. The preponderance of evidence, to my mind, points indubitably to a diagnosis of embolism.

There is a certain circumstance concerning the operation in this case which theoretically may acount for the subsequent history. It was performed under my direction by a man seeking instruction and consumed about twenty-five minutes. The piece of gland left in place by the tonsillotome was fished for repeatedly and the grasping instrument regularly pulled away from the friable material; there was consequently considerable traumatism and an unusual amount of vigorous sponging in the fossa which may have caused dislodgment and discharge of clot into the circulation.

Terminal condition found at examination about six and a half months following operation: the leg seems to have entirely recovered: a condition of athetosis exists in the foot; the arm has recovered control of all movement but the execution is slow; athetosis is established in the hand; the face still shows paralysis at the angle of the mouth. The picture now presented, is substantially permanent; a truly tragic condition resulting from the, generally so-called, insignificant tonsil operation.

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[1] A similar case occurring in the New York Eye and Ear Infirmary was reported by Dr. Gracey in the January, 1917, issue of THE LARYNGOSCOPE.—ED.

27 East Fifty-seventh Street.

EDEMA OF THE GLOTTIS FOLLOWING TONSILLECTOMY.

Dr. E. Lee Myers, St. Louis.

The occasion for my reporting this case is the rarity of edema of the glottis as a complication of tonsil operations. So far as I can ascertain the literature on this subject is very meager. Dr. L. W. Dean (The Laryngoscope, July, 1910), and Dr. C. W. Richardson (The Laryngoscope, July, 1913), both refer to Ricordeau (These de Paris, 1886), who cites Bauchacourt and Martin (*Gazette des Hopitaux,* 1868, p. 433). It is thus seen that what reference there is to this complication is rather indirect and mentioned as a possibility and not as one encountered by recent writers. Ricordeau, in describing accidents following tonsillectomy, called attention to mild infections with much edema which may prove fatal. He quotes Bauchacourt as reporting a case of this kind, and Martin who published two similar cases, the patient having died of edema of the glottis. He cites two cases of his own of edema of the glottis following tonsillotomy with a fatal issue in one of the cases.

The case I wish to report is as follows: The patient, a physician, complained of fullness in both ears. The tonsils were buried, the right one having been clipped a few years previously. Upon manipulation some caseous material could be expressed. No evidence of general infection from the tonsillar condition.

Family history: Father died at 80 of cardiac incompensation; mother at 79. The doctor comes of a family of very muscular, robust men. No familial constitutional diseases.

Personal history: Age 35. Complains of psuedoanginal pains. Has had typhoid; no other diseases. Blood pressure 126. Patient of powerful physique, of plethoric type and weighs 204 pounds.

Data of first operation: The left tonsil was removed at one sitting by dissection, using one per cent quinin and urea hydrochlorid as the infiltration. A slight oozing hemorrhage was the only complication which no attempt was made to control because of the patient's wish to be bled somewhat to reduce his full-bloodedness.

Data of second operation: The same preparation was employed for local anesthetic, and in the same percentage, as in the first operation. No difficulty in separating the anterior pillar from the tonsil; the posterior pillar was more adherent. Two or three tags were removed with the tonsil punch. Slight bleeding from an arteriole was stopped by torsion. No hemorrhage and the patient was taken home.

At midnight I was called hurriedly because of the patient's shortness of breath. His face was slightly puffed and anxious. There was no cyanosis. Laryngoscopic examination showed a turban-shaped epiglottis, with infiltration of the glosso-epiglottidean folds. What little could be seen of the cords showed that they were not involved.

Treatment: Ice was given to suck and this was kept up for forty-eight hours. Ice was packed around the throat for the same length of time. The throat was sprayed with adrenalin for the first twelve hours; after that a one per cent cocain in adrenalin was used. The patient had the characteristic apprehension met with in obstructive conditions of the larynx and it was necessary for me to remain with him continuously if for no other reason than to relieve his anxiety. No tubing or tracheotomy was necessary.

Conclusions: I do not believe that the quinin and urea hydrochlorid can be held responsible for the edema. I have done numerous tonsil dissections with the various local anesthetics and have noticed that in the buried variety of tonsils with adhesions there is quite a little edema of the uvula and the posterior pillar, especially when the patient is rather full-blooded. Anemic and under-nourished men do not seem to react so much to the operation.

There was no fever in this case which excludes anything but a very low-grade infection; but as the use of adrenalin and ice caused the condition to disappear, I believe that the edema was due to the injury to the soft parts and the patient's resisting power which induced a larger supply of lymph to the parts than could be readily carried off. Edema of the soft parts due to the local infiltration is not amenable to adrenalin as I have noticed on numerous occasions when I have prescribed astringents and adrenalin to reduce edema of the uvula frequently seen after a tonsil dissection.

3904 Laclede Avenue.

A CURIOUS CASE OF DIPHTHERITIC MEMBRANE IN THE LUNG SIMULATING A FOREIGN BODY, DIAGNOSED AND REMOVED BY THE BRONCHOSCOPE.

Dr. Ross Hall Skillern, Philadelphia, Pa.

A boy seven years old, referred by Dr. Becker, of Sunbury, Pa., was brought to the Medico-Chirurgical Hospital with the following history. About one month before, he took two beads to school. While holding them in his mouth he was seized with a sudden fit of coughing, one bead slipped down his throat; the teacher recovered the other.

Previous History. Had a severe attack of diphtheria nine months previously, followed by a cough which lasted for about two months, then cleared up entirely.

Present Condition. Violent attacks of cough and suffocation which come on at night. Cough ringing and croupy. Expectorates blood-tinged mucous in considerable quantities. Voice, husky, sometimes aphonia. Examination of chest practically negative.

Fluoroscopic x-ray examination absolutely negative.

Bronchoscopic examination: The left lung. After careful and prolonged search, nothing pathological was to be seen. The right lung. Slightly above and at the lower lobe bifurcation a membrane was noted which bled on being loosened with the dull hook. As the child had been under bronchoscopic examination for nearly an hour and had begun to show signs of distress, it was thought wise to postpone further treatment for several days. About two hours later, words came from the ward that the patient was extremely dyspneic. Dr. Ridpath immediately visited him and found his condition so serious that he was again brought to the operating-room and an immediate tracheotomy performed. Three days later he was anesthetized and the bronchoscope again passed. The membrane was loosened but was so friable that it was only possible to take it piecemeal. This was done until apparently all of the membrane had been removed. The tracheotomy tube was left in place.

That night, pieces of membrane were coughed up and expelled through the tube. The symptoms immediately began to abate, dyspneic attacks disappeared. The tube was removed on the seventh day with no return of the cough or dyspnea. Since then the child has been entirely well.

Bacteriological and pathological examination of the membrane showed almost pure cultures of a Klebs-Loeffler bacillus which had lost its virulence (no influence on guinea pigs). Membrane identical with that of diptheria.

The curious phase of this case was that the delayed symptoms appeared coincidently with the apparent history of an aspirated foreign body.

2030 Chestnut Street.

Ulcero=Membranous Stomatitis and Gingivitis Among Troops on Active Service. F. B. Bowman, *British Med. Jour.*, March 11, 1916.

This is a communicable disease found prevalent among the English troops. From a study of a hundred cases the author found the following:

The disease seems to be but another stage of a well-recognized disease known as pyorrhoea aveolaris. That is to say, the similar organisms are found plus the fusiform and spirivlum. The infection spreads from the gums to the mucous membrane, cheeks, tonsils, tongue, etc. On the membranes of the mouth superficial ulcers form that are covered by white friable membrane, easily removed and leaving a bleeding surface beneath. In advanced cases it suggests scurvy. The gums bleed easily, are injected, retracted from the teeth and spongy, the teeth becoming loose and sensitive. The breath is often fetid. There is always some glandular enlargement. The temperature ranges between normal and 102 degrees F. There is always more or less physical depression. The acute malignant form may be regarded as noma. The ulcerated involvement of the tonsils may be designated as what we know as Vincent angina. In the treatment the author recommends the following: Local treatment with emetine for the pyorrhoea and for the ulcero-membranous stomatitis

Vinum ipecacuanhae	4 drams
Glycerinum	1 dram
Liquor arsenicalis	3 drams

Mix, label "poison" and apply with applicator or tooth brush to teeth and gums.

Stein.

A NEW INSTRUMENT FOR ATTACHMENT TO SUCTION APPARATUS TO MAINTAIN A DRY FIELD IN TONSILLECTOMY UNDER GENERAL ANESTNESIA AND TO LESSEN OCCURRENCE OF POST-OPERATIVE PNEUMONIA.

Dr. Sidney Israel, Houston, Texas.

The aim of any surgeon is to operate always with the field as dry as possible, and to no one more so is this fact of greater aid and importance than to the laryngologist. In the light of recent reports of far too great a number of post-operative pneumonias, following tonsillectomy when done under a general anesthetic, due possibly to the aspiration of blood, or highly infectious material from the tonsils, the writer was stimulated to look about for some means whereby this aspiration would be avoided or reduced to such a minimum that the chances of this complication would be considerably lessened. The result has been ideal and one feature that makes its success and popularity is its simplicity in detail and efficiency in performance.

The device which I have the pleasure to submit has been thoroughly tried in numerous cases of tonsillectomy performed by the various methods in vogue to-day; namely, dissection, Sluder, Beck, and LaForce, together with their popular modifications. It has also been used during suspension laryngoscopy and in several cases of surgery of the mouth, in each instance yielding the same gratifying success Not only is the number of instruments introduced into the mouth reduced, but the added delay, assistance needed, and trauma by the repeated introduction of the suction tube, entirely dispensed with.

The means by which the oro-pharynx is rendered free of all blood, etc., and kept surgically dry during operation in this region, is accomplished by the use of a metal tube that branches into the form of a Y, and is curved on its long axis so that it conforms approximately to the contour of the dorsum of the nose, in order to lie flat and out of the way of the anesthetist and operator. To the ends of each of the metal tubes that form the prongs of the Y, is attached a piece of rubber tubing, the size of which corresponds to a No. 19 French catheter, is about five inches in length, and each distal end has multiple small perforations one-half inch at its extremity.

These tubes are inserted one into each nostril, along the floor of the nose and pass through the naso-pharynx until they extend about one-half inch below and to each side of the uvula. To the stem, or single barrel, of the metal tube, from which the prongs of the Y spring, is attached the rubber tube that connects with any form of suction apparatus. Suction is then started and the contents of this region rapidly emptied without further concern to the operator. Breathing is free, and the gurgling, bubbling sound that accompanies a general anesthetic in patients with excessive secretion of mucous, or, during operation, of escaping blood, is entirely eliminated, and the field kept dry throughout the entire operation.

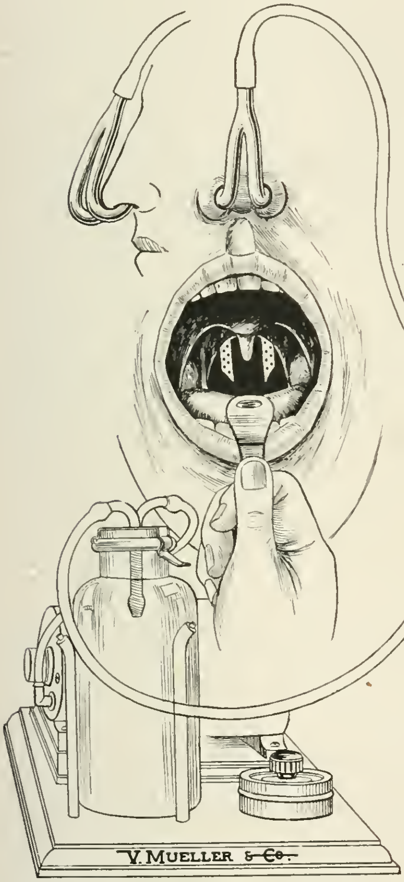
V. MUELLER & Co.

Figure 1.

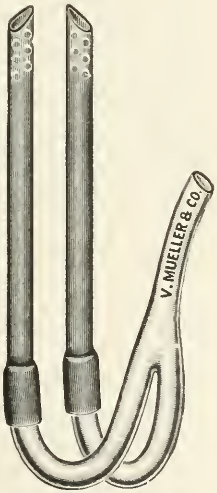

Figure 2.

404 Carter Building.

BOOK REVIEWS.

The American Year-Book of Anesthesia and Analgesia. Edited by F. H. McMechan, A. M., M. D. New York: Surgery Publishing Company.

Anesthesia is a subject with which every surgeon, regardless of his specialty, is vitally concerned, at least in its practical aspects. But, as in other departments of medicine, it is well-nigh impossible to sharply demarcate the "purely theoretical" from the "applied theoretical" or practical and, furthermore, the former of to-day may become the latter of to-morrow. The American Year-Book of Anesthesia and Analgesia has been established for the purpose of presenting the world's ultra-scientific researches as well as the current advances in the science and practice of anesthesia and analgesia. The work is so edited as to deeply interest all those who, in their work, come into any relationship with the subject of anesthesia. The scholarly and wide scope of the volume may be appreciated by mention of some of the splendid contributions contained therein: "The Physico-Chemical Theory of Anesthesia," by Ralph S. Lillie; "Blood Changes Under Anesthesia and Analgesia," by Theodore D. Casto; "The Peripheral Origin of Shock," by Frank C. Mann; "Some Consideration of Respiration in Relation to Apnea, Anoxhemia, Acapnia and Anesthesia," by Yandell Henderson; "Cardias Fibrillation and Chloroform Syncope," by A. Goodman Levy, of London. Of special interest to laryngologists are the contributions on "Ether-Oil Colonic Anesthesia," by James T. Gwathmey; "The Nasal Administration of Nitrous-Oxide-Oxygen," by F. H. McMechan, and "Further Researches in Novocain-Suprarenin Anesthesia," by Richard H. Riethmüller. The volume forms a notable addition to medical literature. Ed.

"Colds" and the Influence of the Atmosphere on the Nasal Mucous Membrane. Leonard Hill, *British Med. Jour.*, April 15, 1916.

It is generally believed that "colds" are contracted because of cold feet. Under what conditions chilling feet congest the nasal membrane? And how is it influenced by conditions of humidity and draught? Cool breezes blowing around the head, the radiant heat of the sun and a warm ground to stand on are the ideal outdoor conditions. When indoors and the feet are chilled by a draught blowing over a cold floor and the head is immersed in warm, stagnant air, the nasal membrane is swollen, congested and covered with thick secretion. Warming the feet at the fire at once relieves the congestion and obstruction. Cold feet alone do not produce these changes in the membrane. It is the indoor conditions of cold, draughty floor and warm, stagnant air around the head which produce the changes. The ideal method of warming and ventilating rooms would be an abundant radiant heat, a warm floor and agreeable movement of cool air. Stein.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, October 26, 1916.

DR. HENRY L. LYNAH, Chairman.

New Safety-Pin Closer for Endoscopic Use. H. ARROWSMITH

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

Mouth Gag. DR. CHEVALIER JACKSON.

Dr. Jackson said that in 1895 he was working on the dog with Dr. Emma Musson and there was some difficulty in keeping the mouth open, when Dr. Musson picked up one of the Killian sponge holders with the large ring end and passed the ring around one of the large tusks of the dog's upper jaw, another around the tusk of the lower jaw, thus holding the mouth wide open. It was so simple and easy that he had the instrument maker make for him an instrument on the same lines. The one presented had some improvement over the one first made, as the ring was not complete so that a rubber ring could be slipped over it thus easing the pressure on the jaws. If the spring pressure was too great, it could readily be lessened by the thumb nut.

A Series of Bronchoscopic and Esophagoscopic Cases. (Lantern slide demonstration.) DR. CHEVALIER JACKSON.

Suspension Laryngoscopy as an Adjunct to Bronchoscopy and Esophagoscopy, Especially in Infants and Young Children. DR. ROBERT C. LYNCH (by invitation).

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. OKADA, Otolaryngologist of the Imperial University of Tokyo (abstract from the German):

I feel highly honored to be present here this evening as a guest of this Society to be able to greet in person my distinguished colleagues in this country, as well as to be allowed the privilege of taking part in the discussion of the valuable papers by Dr. Jackson and Dr. Lynch. As regards the history, in Japan, of the direct methods of examination of the upper air passages, bronchoscopy and esophagoscopy were introduced more than ten years ago and suspension laryngoscopy direct from Killian's school was introduced more than three years ago by me and my former assistants, Prof. Dr. Kubo and Chiba and others. As in other places, so in Japan, these methods of examination have come to be regarded as indispensable in the modern practice of laryngology.

In regard to my own experiences in this respect, I first employed Killian's tubes, but later, at least since the past three years, I have been using particularly Brünning's. For local anesthesia in adults I employed cocain applications with or without a preliminary injection of morphin; in children, general narcosis with chloroform and ether exclusively. Afterwards I began to use a combination of a subcutaneous injection of pantoponscaporamin (about 0.4 twice in three minutes) followed by cocain applications. This proved of great convenience, lessening considerably the secretion of saliva and mucus, and also allaying the nervousness of the patient. However, I do not employ this combination in children as it seems to be quite toxic for them.

The clinical material in the University Clinic in Tokyo consists mainly of the extraction of foreign bodies, either from the trachea, right bronchus or, as in most cases, from the esophagus. In addition we see cases of luetic or traumatic stenosis of the trachea, etc.

For suspension laryngoscopy the Killian apparatus is generally used in Japan, and as a rule in endolaryngeal operations of longer duration, such as diffuse or multiple papillomata of the larynx, or in the various forms of laryngeal tuberculosis, and particularly in endolaryngeal examinations and opreations in children.

There is one point in regard to suspension to which I desire to call your attention. When, in the course of a suspension. the upper wall of the ventricle of Morgagni, namely, the *rima ventricularis*, is raised upwards and laterally by means of a right-angled hook, it is possible in many cases to see the deeper parts of this region. often, however, requiring for better advantage the aid of a mirror as in subglottic laryngoscopy. In fact, in this way, I have in a number of cases been able to make early diagnosis of a latent form of small, primary adenocarcinoma or tuberculosis in the ventricle, and by early operation obtain very successful results. To this slight procedure I have given the name "ventriculoscopy laryngis."

Although we have been using the Killian apparatus we have always felt that something was lacking for the more satisfactory examination of the anterior laryngeal wall. When I shall introduce in Japan the instruments so decidedly and invaluably improved in this country, and which were demonstrated, to my good fortune, by the authors themselves this evening, I believe that we will be able to meet with greater success in future.

Dr. Arrowsmith said that every time he saw and heard Dr. Jackson he was the more impressed by his skill and resourcefulness. The cases so beautifully demonstrated this evening were such as few would encounter, and most men would refer them to Dr. Jackson for relief. It was a privilege to see these rare conditions demonstrated, and the ingenious methods whereby the foreign body impactions had been relieved would be treasured in the minds of all those who had seen them. Possibly the safety-pin which he himself had shown might have been useful in the case of the open pin with the end of the bar impacted.

Dr. Lynch's demonstration had certainly opened up new combinations of bronchoscopy with suspension larwngoscopy. Dr. Arrowsmith himself had never employed this combination as he had seen no special reason for doing so. Foreign bodies in the upper trachea or larynx can often be seized and removed with suspension laryngoscopy alone. As Dr. Lynch had said, *complete* bronchoscpy in the Lynch positive was impossible. The modified position that had been demonstrated might be perfectly feasible, but he did not feel quite convinced that there was any advantage in doing bronchoscopy or esophagoscopy under suspension.

Dr. Emil Mayer said that Professor Okada had requested him to say to those who had not understood what had been said in the German language, that he wished to extend his hearty thanks and to express his appreciation for all the courtesies that had been extended him.

Professor Okada and his associates were the first to introduce the Killian method of bronchoscopy in Japan, and he had also made a contribution to the literature of the subject in an article entitled, "Ventroscopia Laryngealis."

In that article he described his method of raising the ventricle by means of a small blunt hook, introducing a small mirror, thus exposing the anterior as well as the posterior commissure.

Professor Okada is the bearer of greetings from the Oto-Laryngologists in Japan and their thanks for all the courtesies extended to Professor Okada, who has been the president of their association since its inception.

In regard to the papers of the evening, Dr. Mayer said that it was very difficult to say anything about the subjet of bronchoscopy in the presence of the master.

We all bow to Dr. Jackson, know how modest he is in all that he says and does, and regard with admiration a man who can say that he has been able to recover such an enormous proportion of foreign bodies after they have existed within the bronchus for a long period of time. Only those who have seen the granulation tissue that has formed around such foreign bodies know what we have to contend with in attempting their removal.

Dr. Mayer said that he was satisfied that his own results did not come anywhere near those reported by Dr. Jackson.

It was greatly to be regretted that Dr. Lynch has had to depend so largely on the cadaver in his work, instead of being where he could do suspension laryngoscopy on the living.

Dr. Lynch had omitted to say that suspension laryngoscopy permits the use of both hands, a thing that is most desirable in that often a foreign body lies so near, that it might, in the case of a safety-pin, be held firmly with the hook in one hand while with the other the pin could be closed.

Another important use of suspension laryngoscopy was that of intubation under general anesthesia. In a patient that had been under treatment in the service of the speaker at Mount Sinai Hospital this had been repeatedly done with the efficient assistance of Dr. Yankauer and Dr. Kaempfer.

The history in brief was a boy who had been wearing a tracheotomy tube, an attempt had been made by a surgeon to heal the fistula resulting, and as a consequence there was much cicatrization and the boy's condition amounted to a complete stenosis.

Under suspension the parts were rapidly divulsed with uterine forceps, an intubation tube was introduced, left in position, again removed, re-introduced after cleansing, and this procedure has been going on at intervals of about three months for over two years. It is hoped that we may be able to dispense with an intubation tube ultimately. In the meantime this method of treating is far simpler and less annoying to the patient than a laryngostomy would be.

Suspension laryngoscopy is still in its infancy, and we are all greatly indebted to Dr. Lynch for the many devices he has added toward the perfection of the apparatus.

Dr. Yankauer expressed regret that owing to his late arrival he had not been able to hear Dr. Jackson's earlier remarks about foreign bodies. When he arrived, Dr. Jackson was speaking about foreign bodies that had remained in situ for a long time, and mentioned bronchiectasis, etc. Dr. Yankauer said that within the last two years he himself had had occasion to study a considerable number of cases of bronchiectasis with the aid of the bronchoscope. In some of these cases foreign bodies can be found, but in many of them nothing of the kind is discovered. The use of the bronchoscope had aided greatly in the study of these cases. By its employment they had been able to make the diagnosis, remove specimens, and prove the diagnosis in malignant conditions at a time when a carcinoma of the lung was still operable. They had also been able to recognize foreign bodies in cases where the patient had no recollection of swallowing or inhaling anything of the kind. Moreover, they had been able to separate the bronchiectasis cases into groups and to place the indications for operation in such conditions. They had also devised a treatment for the non-operable cases which had proved quite satisfactory. These patients go on from month to month and from year to year coughing out large amounts of fetid expectoration, and up to recently it had not been possible to do anything for them; but with the aid of special apparatus it is now practicable to irritate these cases with antiseptics. After a few irrigations the secretion is diminished from ten ounces to an ounce, or half an ounce a day. He had not yet been able to follow these cases long enough to produce a permanent cure, but the patients had been made comfortable and enabled to return to their labor, and relieved from being offensive to those with whom they came in contact. In this way the bronchoscope has been of material assistance in the treatment of this unfortunate class of cases.

Dr. Yankauer said that he had been especially interested in what Dr. Lynch had said about the value of suspension laryngoscopy. In the removal of foreign bodies from the larynx, the value of suspension could not be denied, although he himself had not had occasion to use suspension laryngoscopy for this purpose. Long before the days of suspension laryngoscopy he had removed safety-pins with the pin open and straddled over the arytenoid notch and impacted in both the larynx and the pharynx. In such cases he would not hesitate to use suspension laryngoscopy.

As to the value of suspension laryngoscopy for bronchoscopy lower down he was inclined to differ with Dr. Lynch. Dr. Lynch claimed that one of the important features of suspension laryngoscopy was to enable one to pass the glottis without producing traumatism, and thereby avoid the edema which occurs after same in some cases. The reports of such cases have been made mostly by those who used the Brünning bronchoscope. It was easy to see how that happens. As everyone knows, this device has an inner and an outer tube, and where they meet there is a projection, and this projecting point will, in an adult, come about two inches below the glottis. During the removal of the foreign body the instrument must be moved about, and sometimes, with the quite sharp edge that the instrument presents, it is not surprising that there should be some trauma. Dr. Jackson had not had such edema in his post-operative work, nor had he had any. On the other hand, in his own experience, he had not seen subglottic edema following bronchoscopy in children; but he had seen a number of cases where an edema of the trachea had existed before the bronchoscopy was performed. In one case where the patient was a child of ten months, with an open safety-pin, there was such an edema that it was impossible to pass the instrument through the glottis. but he had been able to look through the tube and see the safety-pin projecting just at the birfurcation and he had passed the forceps through the swollen glottis and trachea, then opened the forceps wide enough to grasp the foreign body and succeeded in removing it very satisfactorily. He had also seen other cases of edema of the trachea which were well marked at the time of the bronchoscopy. In one case of this kind in which he forced the bronchoscope through the swollen tissue, he was compelled to do a tracheotomy, and edema was so intense that it was with great difficulty that the lumen of the trachea could be found. The so-called subglottic edema is not only in the immediate neighborhood of the vocal cords, but there is also edema of the trachea lower down. It seemed doubtful whether the use of suspension laryngoscopy for the passage of the instrument would help very much, for if the bronchoscope will not pass the glottis it is injurious to pass it anyway; while if there is no swelling of the mucous membrane it would only add to the length of the procedure to apply the suspension laryngoscope, and to remove it afterward.

Dr. Yankauer said that he could not say whether or not the employment of suspension laryngoscopy in the position indicated by Dr. Lynch would interfere with the use of the bronchoscope. It seems to him that having the patient in the suspension laryngoscope would be a disadvantage, for the bronchoscopic tube itself is an instrument for moving the foreign body about and guiding the other instruments, and the mobility of the patient's head is a very great aid; therefore, as Dr. Lynch admits, it may become necessary to remove the suspension laryngoscope in order to obtain the freedom which is necessary.

Dr. Jackson had once said that his left arm afforded the best suspension that he knew of; anyone who can hold up the infant's head can introdue a bronchoscope easily and readily, and for that reason he would be inclined to feel that the use of the suspension laryngoscope for this purpose would rather add to than diminish the complications, especially since it requires as much skill to introduce the suspension laryngoscope as to introduce the bronchoscope itself.

Nevertheless, the new position described by Dr. Lynch offers some decided advantages. Dr. Yankauer said that about two years ago he had in part constructed an apparatus based upon somewhat the same principles, but he had never completed it. As Dr. Lynch had claimed, there is a good deal to be said for this position, and he would be glad to use it some time and attempt to pass the bronchoscope in this way, and see if he could verify for himself all the good things that had been claimed for it by Dr. Lynch.

Dr. MacKenty said that he for one was very glad indeed that Dr. Jackson had taken up permanent residence in New York, for his presence here would be a stimulus which all need in this work. We have been doing bronchoscopy more or less, but he has been doing it more, and his coming here will provide an impetus which will send us all forward much faster. It seemed very strange that in Pittsburgh they had many more cases of foreign body than we have in New York, for Dr. Jackson had told him that he had had 80 cases in one year. If Pittsburgh has eighty cases, with its population, then New York ought to have 500 cases. We have not seen them, so many of them must be unrecognized. As Dr. Jackson had said, these are not made hospital cases; the child is brought to the hospital with a history of having had a choking spell, and the interne says that it is not a hospital case, since when observed by him the child seems normal. The child is sent home and maybe dies later of an unrecognized condition. As this work develops, more attention will be paid to these conditions, and we will have more of these cases. The bronchoscope is not being used sufficiently.

Dr. MacKenty said that this year he had been fortunate enough to recognize a growth in the trachea. Later examination proved it to be specific (a gumma). He had had occasion to see two or three cases some years ago in Vienna.

Dr. Jackson's mechanical spoon would prove a great help in removing the soft foreign bodies which he had described. Everyone had seen such cases and knows how difficult they may be.

Speaking of foreign bodies in the larynx, Dr. MacKenty said that in the spring a case had been referred to him from Lake Saranac. The patient had been sent there for tuberculosis. The foreign body happened to be part of the root of a tooth which had dropped into the lung during extraction. It had been there for several months, and was well embedded in the right lower lobe bronchus. It was extracted with some difficulty on account of the granulation tissue which had formed around it. The patient had been sent to Saranac as a case of tuberculosis, and had been diagnosed there as a foreign body case. After the foreign body was extracted the patient recovered completely.

Dr. Jackson had showed a large safety-pin extracted from the esophagus. Dr. MacKenty said that he had had a similar case lately, in which he had found it impossible to dislodge the pin from the esophagus, where it had lodged, as it extended more or less across. He cut the pin in two and so managed to extract it. That might not be considered good technique, for a piece might have been lost, but it came out without much difficulty.

The profession was greatly indebted to Dr. Lynch for his improved suspension apparatus. There was no question but that he had placed suspension laryngoscopy upon a better basis by his ingenious work. Dr. MacKenty said that he himself had been using suspension laryngoscopy since it was first introduced, and he agreed with Dr. Lynch in regard to the use of suspension laryngoscopy with children. He had seen Dr. Lynch work and knew what his technique and skill were; they are equal to that of any man, and if he finds it necessary to use suspension in order to pass the bronchoscope in a child, we should consider what he says.

Dr. MacKenty recalled a case that came to him several years ago. The patient had a foreign body (a dime) in the larynx that had been there for eighteen months. It had lodged transversally and was extracted with very little difficulty, using the Jackson instruments. Speaking of the way that foreign bodies disappear, he told of an interesting case he had some years ago, where a small pen was located in the trachea. The instrument was introduced, and the house surgeon asked to extract it. Then something happened and the pen disappeared. A careful search failed to reveal it. Then it occurred to him that it might be in the naso-pharynx, and he looked there and found it. Then he asked the house surgeon to take it out. He inserted his finger into the naso-pharynx and said it was not there. Then he himself looked again, and could not find it—it had disappeared again. He then examined the posterior edge of the septum, which seemed abnormally thick, and passing a probe through the nose he found the pen applied by its concave surface to the posterior edge of septum.

Dr. Lynch with his ingenious mind had adapted a good idea in the Johnson method of using flexion instead of extension. There was no doubt that flexion gives a better view.

Dr. Hurd said that there was no doubt of the admiration which all felt for the technique of such men as Dr. Jackson and Dr. Lynch. He himself had been much interested in the Johnson position, used by Dr. Lynch with the suspension apparatus.

A number of years ago he had a case of a child with a foreign body in the esophagus. He could see it and take hold of it. It was a collar button, but although he could grasp it with the forceps he could not extract it. The child died that night.

Another time he had the case of a child of five years who had swallowed a jackstone. He slipped down a snare and managed to get one of the arms over the jackstone, and then turned it around and disengaged the jackstone and brought it out of the tube. That was one problem that he had solved, and since then he had had several others in which he had used the snare.

Inanother case the foreign body was a piece of chicken bone as sharp as a knife, and it had lodged in the throat of an old lady seventy years of age. She was a very intelligent woman, and had described the piece of bone very clearly. He succeeded in passing the tube without anesthesia, but found when he seized the bone with forceps that if he used traction it would break the bone and cut the esophagus badly. He therefore tickled the esophagus and started up a reverse peristalsis, and out came the bone.

These various substances in the tube offer many problems, and he had found the snare very useful at times.

Dr. Imperatori asked Dr. Jackson whether in the case with the bar-pin that he demonstrated, it would have been possible to have cut the pin with a pin-cutter. He intended to try Dr. Lynch's new method of suspension. He had found that he could not bronchoscope patients satisfactorily while suspended, and had been surprised to hear the title of the paper, but understood it now.

With regard to the use of scopolamine, which Professor Okada had referred to, employed on animals, it reduces the irritability of the superior and inferior laryngeal nerve markedly. It would seem that the use of scopolamine in patients who are to be bronchoscoped would hardly be a good idea, for the irritability of the larynx is reduced to such an extent that the cough reflex is abolished.

Suspension, as described by Dr. Lynch, should be used for surgical procedure within the larynx, and the other methods, as described by Dr. Jackson, for diagnostic purposes. For bronchoscopy and esophagoscopy the methods of Jackson or Brünning are very satisfactory. The use of the endoscope has always been so intimately associated with foreign body work, that its possibilities seems to have been neglected in the very useful field of diagnosis.

Dr. Freudenthal said he would like to make a few remarks on Dr. Lynch's paper. The use of suspension laryngoscopy for introducing the bronchoscope was one of the first experiments he made in that direction. He believed that he himself had been the first to demonstrate it at a public meeting in New York. He got the bronchoscope down to a certain point, but not beyond; then, by introducing a mouth gag and removing the suspension apparatus, he got further down. Unfortunately, he had not tried it with infants, but it would seem that it had a very great field of usefulness.

Dr. Freudenthal said he had abandoned the use of scopolamin and morphin, and other general narcotics, for a long time in doing suspension laryngoscopy, as well as bronchoscopy.

He did not quite understand the use of the instrument which Dr. Okada had spoken of, and would be very glad to have it explained.

Dr. Myles said that nothing but commendation could be uttered for the demonstrations of the evening, and that all would heartily endorse those specialists of our specialism who are making such work approximately perfect. Dr. Jackson's coming here will undoubtedly give it a needed stimulus. Perhaps in a few years Dr. Lynch would come to New York also and then we will have our five hundred or a thousand cases to report. Probably the most neglected part of our specialty consists of those chronic diseases of the trachea and bronchi which can be reached through the aperture of the vocal cords by local applications.

Dr. Jackson said that a few points had been brought up to which he felt called upon to refer. In the first place, he differed very strongly with Dr. Arrowsmith, who had referred to the methods by which he (Dr. Jackson) overcame these difficulties. Dr. Arrowsmith should have said the methods by which he attempted to overcome them. He had illustrated the methods which finally succeeded. Other methods which were tried did not succeed and often in a single case several methods were tried before success was attained, and in a few instances he did not succeed ultimately. The gentlemen might perhaps remember Edison's remark that he had been trying new things all his life, most of which would not work. That may occasionally be the case with the attempts at removing a foreign body; but if we proceed carefully we can at least avoid doing harm. The main thing is to think out carefully all possible risks, and avoid them. We should above all things avoid ruthlessly tearing out the foreign body.

Some cases remind one of the ignorant farmer who hitched a team of horses to the malpresented calf.

Dr. Jackson said he was interested in what Prof. Okada had said, but unfortunately his (Dr. Jackson's) knowledge of German was so defective that he had not been able to follow clearly all that had been said. He had followed Prof. Okada's work in the German literature as closely as he had been able to do it, and had been much interested in it, and he congratulated Dr. Okada on the excellent results.

Dr. Yankauer's work in bronchiectasis was most interesting, and he had accomplished a great deal, but even had he not been able to accomplish anything directly, it was work in a new field and was full of promise. It was like a baby. No one could predict what it was going to be. Like Dr. Arrowsmith's work in tuberculosis, when we work in new fields we may develop new things which exceed our anticipations. Dr. Jackson endorsed what Dr. Yankauer had said about subglottic or tracheal edema; it must not invariably be attributed to traumatism, though trauma is the usual cause. If it really existed before the tube was introduced, from trauma, from a foreign body or from a previous bronchoscopy, edematous stenosis might follow a gentle bronchoscopy. He then related a case, which had been cited to him by another physician, of a child with a foreign body, supposed to be a nut kernel. The child was extremely dyspneic, and the parents refused to have anything done. It was clearly an edema and not an obstruction by the foreign body. The child died from the gradually increasing edema. Had a bronchoscopy been done, the stenosis would have been attributed to the traumatism of the tube. Foreign bodies knocking about in the trachea can produce an edema and a complete closure in a child. What Dr. MacKenty had said about foreign bodies not being recognized was a valuable point. Dr. Jackson said that he had been impressed by the number of cases of foreign body recognized by the x-ray which had not been suspected, and he understood that internists are now relying very much upon the Roentgen ray to aid their diagnoses of thoracic disease. He recalled fourteen cases in which a foreign body was revealed by the x-ray, when it had been employed for the diagnosis of some other supposed condition in the chest. If a radiograph were taken of every case of chest disease, many foreign bodies would be revealed that had been unsuspected. Dr. Hurd's suggestions in regard to the cases he had spoken of were excellent. Dr. Imperatori's suggestion regarding cutting the pin was a very good one. He had himself mentioned only one of the ways by which he had succeeded. No doubt there were many other methods of doing it, and some of the present methods can be improved upon. Dr. Jackson said that he had had no experience with scopolamin, and thought its safety remained to be proven. The cough reflex is a very good thing at times; it was also annoying in some cases. Dr. Myles' suggestions and Dr. Lynch's paper were both valuable.

Dr. Lynch said that to introduce a bronchoscope without traumatism by the aid of a spatula, was the problem he tried to solve. It occurred to him that it would be much easier to do it under suspension than with the usual spatula. It was simply another form. It holds the mouth open and holds the child still. If you are dealing with a tracheal edema produced by a foreign body, you will get a chance to see that which you don't see if you are trying to work your way through by other means.

With the new position, it is very much easier to introduce the spatula, the tip does not touch the posterior pharyngeal wall. It is much easier for an untrained assistant to hold the head in the median line in order that you may control the tongue, than it is to have the assistant hold the head properly when it is hanging over the table. Again, even if you raise the patient by the aid of the vertical crane and make the crane travel toward the feet, it is surprising how the larynx comes into view, and the tissues of the neck are very much softer and have less tension.

Lastly, you don't have to use a high table. You can stand up and look down in the new position, which is in the general pathway of the trachea into the chest cavity.

The question of removing foreign bodies with either a tube or spatula is a question of personal preference, and the choice of the spatula, the suspension spatula, or the Jackson spatula for the introduction of the bronchoscope is a matter of personal preference; but with suspension laryngoscopy you have both hands free, and the left hand can serve some other purpose than that of holding up the suspension appartus. And, finally, you will diminish the manipulative traumatism to nothing if every move is under your direct guidance. To me this is the one most important point under discussion.

Regular Meeting, November 22, 1916.

Carcinoma of the Epiglottis: Removal Unler Suspension Laryngoscopy: No recurrence in Three Years. DR. EMIL MAYER.

The patient here presented is the same whose case is recorded in the transactions of the American Laryngological Association for 1913, as also in the Archiv. für Laryngologie for the same year.

He first presented himself in June, 1912, complaining of some pain in swallowing especially cold substances, and at night.

The diagnosis of edema of the uvula and leukoplakia buccalis was made.

He might not then have consulted a physician were it not for the fact that both parents had died at the same age of the patient at that time, sixty-four. A sister and brother had died of phthisis and two brothers of diabetes at approximately the same age. The patient improved somewhat under treatment, went abroad and returned in January, 1913, with the same symptoms and much nasopharyngeal catarrh.

An examination showed the same condition as previously. One month later there was an entirely new condition on the laryngeal surface of the epiglottis. A new growth was present, with a deep ulcer in the center.

A part of this was removed and referred to the pathologists, who reported cylindrical cell carcinoma.

On February 20, 1914, under ether anesthesia, the patient was suspended with the Killian apparatus, the epiglottis seized with forceps and removed entire and is here presented.

He made an uninterrupted recovery except for a rather alarming hemorrhage on the second day after operation.

Since that time nearly three years have elapsed, and the patient has experienced no discomfort whatever from the absence of his epiglottis, swallowing all manner of foods, and with a perfectly clear and resonant voice. There has been no recurrence.

It is also unique in that the malignancy was seen in its inception, and is an added proof of what may be done for malignant disease, seen early; the case is the first in which the epiglottis was removed entire under suspension.

DISCUSSION.

Dr. Freudenthal said that he considered the case an important one, as it showed the importance of suspension laryngoscopy. A few days ago he had removed an epiglottis in a tuberculous patient, simply using the old big curette of Killian. The epiglottis was removed in the easiest possible way with this biting forceps, and the wound was afterwards smoothed off and healed perfectly. In cases of carcinoma of the epiglottis, such a procedure might perhaps not be advisable.

Dr. King said that he had examined the patient and wished to congratulate Dr. Mayer on the splendid result achieved. He had never before seen such a beautiful result following the removal of the epiglottis. Dr. Mayer had spoken of the severe hemorrhage occurring twenty-four hours after the operation, and it would be interesting to know by what means it was stopped.

In closing the discussion, Dr. Mayer, replying to a query as to instruments used for the removal of the epiglottis entire, said they consisted of two long-handled scalpels, right and left, the entire length being ten inches, and there was a slight curve upwards of each blade.

As to the treatment of the hemorrhage which occurred on the second day, ice applications, gargle of peroxid, with compression of a large pad of gauze drawing the tongue well forward alternating, was quite sufficient to control the bleeding.

In reference to the proposed method of punching out pieces of the epiglottis, the speaker was greatly opposed to any surgical method that meant cutting into the cancerous tissue, and felt that it was the general conception that such procedure was dangerous and that the incision should go well beyond the disease, and healthy tissues only be incised.

The case in question bore a very great lesson as showing the possibility of a cure of cancer if seen early and thoroughly eradicated, nor could too much praise be given the suspension method which had made it possible to remove the epiglottis entire as shown by the specimen which had been passed around among the members.

Laryngostomy for Carcinoma. Dr. John McCoy.

The patient, Mr. M., age 44, was first seen on Sept. 3, 1916. He gave a history of increasing hoarseness for eighteen months, and lately, some dyspnea. On examination, his larynx showed an infiltration of its entire right side with small papillomatous projections in the region of the false cord. His doctor reported that a Wassermann test was negative. On Sept. 6, 1916, a section was removed from the infiltration and the report returned that the growth was epithelioma.

On Sept. 13, 1916, a preliminary low tracheotomy was performed. This operation disclosed the fact that the patient had an extremely deep trachea and showed the necessity for the surgeon to be provided with the long tracheal tubes of Jackson. One week later, the complete removal of the larynx was performed, and the trachea was sutured to the neck. The patient made an uneventful recovery with one exception. On the second day after the operation, his pulse rose to 190, while his temperature was only 100½ by rectum. It was decided that this was a tachycardia due to pressure of gauze packing on the vagus. The packing was removed and within one hour the pulse rate fell to normal; otherwise his convalescence was perfectly normal and he was able to leave the hospital in four weeks.

The reason for presenting this case and the one which the writer presented last spring before this Section, is because of the wonderfully easy convalesence of these patients. This the writer attributes to three things, in addition to the usual surgical caution. These are the preliminary tracheotomy, as nearly as possible a sterilization of the mouth, and an anesthetization by rectum according to the method of Gwathmey.

DISCUSSION.

Dr. Myles said that for many years he had tried to find safer procedures in the operation of laryngectomy, especially with reference to the too frequent deaths from broncho-pneumonic infections; and he believed that Dr. McCoy's efforts in sterilizing the mouth and the adjacent cavities was a progressive step in the right direction. He believed that the free use of alcohol—with or without a small percentage of iodin—was of the greatest advantage. A 95 per cent solution of alcohol, discreetly applied with cotton applicators and followed by a nebulized spray of some oil was of great importance.

Dr. Thurber said that he had had the pleasure of seeing Dr. McCoy's case a few days ago and was impressed with the prompt and easy recovery from the operation with no complications. The tracheotomy was a very low one, part of the scar still being seen on the sternum, and he had also experienced the deep position of the trachea in this region. In a case of his own, rubber tubing had to be resorted to until a long enough canula could be obtained.

Severe Recurrent Hemorhage from the Nasopharyngeal Vault of Over Twenty Years' Duration. Dr. Wolff Freudenthal.

Dr. Freudenthal said that the patient had consulted him for the first time some twenty years ago, when she gave the following history: Mrs. B. N., 35 years of age, had had one child, which died after an operation. For the last two years she had been spitting blood, and has a sensation as if something was sticking in her throat, causing her to cough. The blood usually comes during such attacks, but sometimes occurs spontaneously. All this, independent of the season of the year.

The patient is a thin, anemic, weakly person, who was never sick before. Her sputum had been repeatedly examined for tubercle bacilli, but always with a negative result. (Neither have any tubercle bacilli been found during the course of my treatment.) On examination, the lungs were found to be perfectly free, but there was a very marked rhinitis and pharyngitis sicca, and a mass of inspissated crusts and scabs were noticed in the retropharynx. When she was regularly treated in the clinic, she lost almost no blood; but if she stayed away for a week or longer she bled afresh and a terrible dryness occurred. At that time I could plainly see an elongated ulceration at the vault of the pharynx. She was cauterized with a 50 per cent solution of nitrate of silver, and some time later she was sent to the seashore, where the bleeding ceased entirely.

Since then she had followed Dr. Freudenthal through all the clinics he has been connected with, appearing generally about twice a year for a prolonged treatment of six weeks or so. For the last seven years she has been free from any hemorrhage, but this fall it returned with renewed vigor, leaving her in quite a weak condition. An ulceration was found on the left side. This was treated as before, and she has now regained her strength.

This case, which was published twenty years ago, was mentioned at that time in connection with Dr. Freudenthal's studies on the etiology of pulmonary tuberculosis. At that time, in examining 81 patients at the Montefiore Home, ulcerations were found seven times; besides this, there was noticed quite frequently an intense hyperemia in the naso-pharynx, which contrasted strongly in consumptives with the pale anemic condition of the posterior parts of the nose and the velum. The frequency of hemorrhages from the naso-pharynx was peculiar. While he saw them only once in tuberculous patients, they were present five times in the others. It was remarkable that in one of these six cases were tubercle bacilli found, as would be expected a priori. It could be explained only in one way. If the bacilli are not too deeply embedded in the tissues, the flow simply carries them away, thus offering a certain safety against the invasion of the same. This patient never had tuberculosis, nor does she show any symptoms thereof at the present time; but it is remarkable that she is still alive after having had such severe hemorrhages extending over so many years.

A Case of Nasal Deformity Due to the Sub-Mucous Operation Corrected by the Transplantation of Bone. Dr. William Wesley Carter.

This gentleman, 30 years of age, had a blow on the nose when a child which caused an obstruction to nasal respiration and some irregularity of the nasal bridge.

The case is non-specific. The patient has always enjoyed the best of health.

On April 1, 1915, he submitted to an operation for a slight irregularity of the nasal bridge, and two weeks later a submucous operation was performed by the same surgeon. This later operation was followed by an abscess which was treated for some time before it healed. Shortly afterwards he noticed a depression of the bridge. This depression increased until the deformity shown in the cast was produced.

I saw the patient for the first time on Nov. 2, 1916, one and one-half years after his operation. At this time he had a typical saddleback deformity. There was practically no support to the bridge below the ends of the nasal bones, most of the cartilaginous septum having been removed at the time of the operation, or having been destroyed by the infection. The extent of the deformity is well shown in the cast which is being passed around.

I transplanted about two inches of the ninth rib on Nov. 6, by the intranasal route. The technique of this operation I have already described before this section.

The result, you will note, is entirely satisfactory. The bone-graft is in good position, has already established its nutrient connections and is supporting the nasal bridge. The deformity is entirely corrected, and the nose is as strong as it ever was.

DISCUSSION.

DR. HARMON SMITH said that he wished to commend the outcome of Dr. Carter's surgical procedure and likewise to say that he had not yet seen any unfavorable result in the plastic work done on the nose by Dr. Carter. These remarks embodied the observation of his work over a long period of time. He wished to emphasize the fact, however, that a great many cases were now submitted to major surgery, when the subcutaneous injection of paraffin would have met the requirements. While paraffin was limited in its application, it was, nevertheless, a perfectly feasible performance when the necessary restrictions were observed. Dr. Smith said that he classed the correction of his nasal deformities into, first, those capable of being corrected by paraffin; second, those requiring the bridge splint operation, and thirdly, those which could only be corrected by the introduction of a rib.

DR. SCRUTON asked if Dr. Carter considered it necessary to anchor the superior extremity of the transplant in every instance?

A Case of Staphylococcemia. DR. W. W. CARTER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. DWYER said that this was a most interesting case from many points of view, and he congratulated Dr. Carter on the way it had been worked up. The case was to him a pyemia, with the original focus in doubt,—it may have been the sinuses, the teeth, etc. The blood culture findings were noteworthy. He had had occasion to see one case of general septicemia due to pan-sinusitis with infection with the same organism, and from his statistics he found that five to ten per cent of acute mastoids were due to this organism. The hemorrhages were due to the action of the organisms and would tend to show that the case was an advanced one, when Dr. Carter saw the case first, as hemorrhages do not usually occur early. The purulent condition of the nose was interesting. The condition could not have been primary, but again it could be a secondary ulceration, just as the hemorrhages on the skin. Dr. Dwyer thought that all such cases should be placed on record.

Septal Hemorrhage: Its Cure by Submucous Elevation. DR. JOHN LESHURE.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. HARMON SMITH said that in his experience the necessity for operative measures, in cases of this class, had not obtained. In earlier years he had been induced to try the actual cautery but it had never worked satisfactorily, owing to the fact that he either got it too hot and it made more bleeding, or too cold, thereby not being effective. Fused nitrate of silver had never failed, however, to overcome any bleeding ulcer of the septum. He believed, moreover, that when hemorrhages occurred in elderly people, with high blood pressure, that it was nature's safety valve and that they should be permitted to bleed for a long while before any efforts were directed towards its stoppage. He also believed it was quite possible that many brain hemorrhages were prevented by a nose bleed, thus lessening the blood pressure in the cerebral vessels.

Dr. Carter stated that on one occasion a young lady was brought to his office from a nearby village who was in almost an exsanguinated condition due to hemorrhage from a septal ulcer.

She gave a history of having had hemorrhages from this ulcer at intervals for several years. On the night before he saw her she had been bleeding in her sleep probably most of the night, and when she awakened she was hardly able to stand.

Examination showed a fairly large ulcer on the right side of the septum from which an intermittent stream of blood was coming, the septal artery being eroded. Dr. Carter did a modified submucous resection, including the ulcerated area and the surrounding cartilage. He then introduced a purse-string suture around the ulcer; this stopped the hemorrhage and in a comparatively short time the ulcer healed completely.

Dr. Carter believes that in treating ulcers of the septum, the cartilage at the base of the ulcer should always be resected for it is always involved in the inflammatory process and prevents healing.

Dr. Wilson said that if he understood the doctor's paper, he stopped the hemorrhage by breaking the intima of the artery. Why was it necessary to dissect up the mucous membrane? Why could it not be done by pressure upon the septum?

In reference to nose bleed from high pressure, Dr. Wilson said that he had seen several such cases; in one case when the pressure was 100, he did not attempt to stop it, and the man, who was 68 years old, lived for a year afterward and then died of apoplexy.

Dr. King said that when, several years ago, he had read Dr. Thompson's paper on "The Submucous Resection as a Means of Curing Septal Hemorrhage," published in The Laryngoscope, it seemed to him that it was not an unusual procedure, as he himself had performed several such operations on patients who had come to him for relief from nose bleeding. In such cases, he had found nasal obstruction due to a deflected septum. The lack of air entering the nasal chambers,—in other words, the nasal obstruction,—had caused the patient to pick the nose and thus produce excoriation of septal blood vessels with consequent hemorrhage. Frequently these patients had been unconscious of picking the nose, and it would seem that the nasal obstruction would cause them to pick the nose unconsciously at night while sleeping. The bleeding in such cases is only one of the consequences of nasal obstruction, and if there are no contra-indications the submucous resection should be done to relieve the obstruction. When the obstruction is removed, the patient will no longer pick the nose, and consequently, as the cause of the bleeding has been removed, the hemorrhage will have been stopped.

In such cases as he had described, where the bleeding was a sequel of nasal obstruction, the submucous resection seems a rational procedure.

Dr. Scruton said that the criticism was directed by a misunderstanding concerning the type of septal hemorrhage that Dr. Leshure's technique was intended to control. It was quite apparent that the method recommended in the paper was not intended to apply to hemorrhage from a given point but to wide-spread oozing, and it seemed to offer a distinct advantage over cauterization in that it preserved the membrane.

Inflatable Rubber Bag for Intranasal Use. Presented by Dr. A. L. Beck.

The members were favorably impressed by the ingenious device, many giving Dr. Beck personal assurance that they would give it immediate trial in their practice.

An Interesting Cut-Throat Case. Dr. William W. Carter.

(To be published in a subsequent issue of The Laryngoscope.*)*

DISCUSSION.

Dr. Emil Mayer said that no two cases of throat cut are ever quite alike, and each one must, therefore, be treated in accordance with the injury sustained.

The speaker mentioned a case which he had seen recently in Mount Sinai Hospital, in which the epiglottis had been cut through and evidently sloughed away.

The arytenoids could be seen on attempts at phonation, and the entrance to the esophagus. The speaker was able to introduce a large sized Schröter tube into the larynx and trachea, and phonation was possible.

A tracheotomy had been done as also a gastrostomy, which latter solved the feeding problem.

It was proposed to introduce a piece of fascia so as to prevent too much drawing in of the vicatrix, and complete recovery was anticipated.

In all these "cut throat cases" it is rather remarkable how they succeed in cutting in the wrong place to achieve the end that they desire, as also the extreme eagerness with which they afterward desire to recover from their self-inflicted wounds.

Treatment of Graves' Disease by the Roentgen Ray. M. Seymour, *Boston Med. and Surg. Jour.*, Oct. 19, 1916.

Eighty out of 144 cases were given at least two treatments with the Roentgen ray and all, except seven, have shown improvement, as evidenced by gain in weight and lowering of the pulse rate. The advantages of the Roentgen ray treatment are that there are no fatalities, no resulting scars, absence of pain and if the treatment is unsuccessful operation can be done with less risk because of the favorable action of the rays on the thymus gland. P. F.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Meeting of January 2, 1917.

DR. SIDNEY L. OLSHO, *Reporter.*

Epithelioma of the Ethmoid. DR. GEORGE M. COATES.

DR. GEORGE M. COATES presented a female patient, age 35, who first came under observation November 13, 1916, with a swelling on the right side of the nose, first noticed two years previously, and having gradually increased in size since that time. There has been progressive loss of body weight and loss of the senses of taste and smell. Both nasal passages are occluded. Marked deafness with annoying tinnitis has been present during the past week and non-productive cough during the past two weeks. There have been no night sweats. She has had expistaxis from the right nostril every few days for the last year, bleeding profusely sometimes.

On transillumination, all of the sinuses are clear excepting the ethmoids. Examination shows the septum pushed to the left and the entire right nostril occluded by a soft, friable mass, apparently originating in the ethmoid region.

On November 15, this mass was removed with the snare and punch forceps. Bleeding was free but was controlled. The mass removed was the size of a pigeon's egg and consisted of a friable vascular mass, in parts quite firm. Histologic diagnosis: Basal cell epithelioma of the ethmoid.

Spindle Cell Sarcoma of the Ethmoid Involving the Supraorbital Soft Tissues and the Antrum. DR. ROSS H. SKILLERN.

DR. ROSS H. SKILLERN presented a patient, Miss M.. age 39. She first noticed a painful swelling in the region of the left lachrymal duct in August, 1916. On external pressure a thin liquid exuded from the left nostril. The supraorbital region was soon involved. The left side of the nose gradually became occluded. She has severe supraorbital headaches.

Examination of the nose, December 1, 1916, showed the left side of the nose to be occluded with polyps, apparently originating in the ethmoid region. The supraorbital region is protruding. X-ray examination showed a mass in the ethmoid region with destruction of cell walls. Clinical diagnosis: Hypertrophic fronto-ethmoidal sinusitis.

The polyps were first removed intranasally and the ethmoidal cells destroyed. Portions were sent to the patrological laboratory.

One week later an external opening was made. The entire ethmoidal labyrinth was found to be degenerated into a large tumor mass, infiltrating upward into the supraorbital soft tissues and downward into and filling the antrum. The incision was closed. The histologic diagnosis is spindle cell sarcoma.

Giant Cell Sarcoma of Maxillary Sinus. DR. ROBERT F. RIDPATH.

DR. ROBERT F. RIDPATH presented a patient, male, age 53, of medium stature, considerably emaciated. History of a blow on the cheek, by a heavy board, two years ago. Considerable subsequent swelling but no skin abrasion. After two months a lump formed, under the skin, which was treated by x-ray at weekly intervals for seven months, without relief, but with a consequent breaking down of the skin and the formation of a fistular opening into the antrum. A radical Denker operation was indicated and performed, September 29, 1916. The tissue did not heal after operation but has continued to slough and necrose. The fistulous opening has enlarged and will admit a thumb. Histological diagnosis: Giant cell sarcoma of maxiliary sinus.

Carcinoma of Lingual Tonsil and Epiglottis. DR. JAMES A. BABBITT.

DR. JAMES A. BABBITT presented a patient, O. H. F., male, age 59, who came under observation December 5, 1916. He complained of sore throat, dysphagia, pain in the larynx radiating to the ears, frequent hoarseness, at times aphonia and the presence of a lump on the left side of the neck.

The lump, when first noticed, October, 1916, was small and soft, but in one month, it had become larger and harder. A small lump is also noticed on the right side of the neck. There has been no loss of weight or other significant symptom. A secondary anemia, however, is present. Tuberculosis and syphilis were excluded. Alcohol has been used to excess up to five years ago, smoking tobacco to excess until four months ago.

Examination of the left side of the neck shows a flat, diffuse, indurated area, the size of a half dollar, just over the middle of the sterno-cleidomastoid muscle and a hardness of the submaxillary gland, but no nodules. The right submaxillary region shows some induration.

Examination of the throat shows a nodular, non-ulcerated mass, involving the lingual tonsil and epiglottis and extending downward into the larynx, occluding a view of the cords. The clinical diagnosis and the consensus of opinion at the meeting is that the condition is one of carcinoma.

Mycosis Fungoides Involving the Tonsils, Soft Palate and Uvula. DR. MATTHEW S. ERSNER.

DR. MATTHEW S. ERSNER presented a patient, H. P., male, age 34, colored. Five years ago the right tonsil became swollen and after several weeks exuded a muco-sero-pus. In the course of the subsequent six months, the following structures were involved, uvula, left tonsil, right and left tonsillar pillars.

In the last five months, deep ulcerations and excoriations developed on the floor of the mouth, spreading to the outer edge of the tongue.

The soft palate is edematous, of pale, glassy appearance. The other mentioned structures are all, more or less matted together in a granulomatous mass, with polypoid structures hanging down into the pharynx. From time to time, a polypoid mass has sloughed off. On six occasions in the last four years, hemorrhages lasting from one-half to twenty-four hours followed. The clinical picture resembles that of syphilis.

Blood-serum, bacteriologic and biologic studies were made, but failed to establish a diagnosis of syphilis or tuberculosis. There has been no glandular enlargement and no loss of body weight.

Finally a section was removed for histologic study. In the sections, certain areas resemble tuberculosis; others, small, round-cell sarcoma. Diagnosis after study by Drs. Kolmer, Smith and MacFarland, of the University of Pennsylvania: Granulomata mycoses fungoides.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY,

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Twenty-second Annual Meeting, May 5 and 6, 1916.
White Sulphur Springs, West Virginia.

The President, DR. S. MACCUEN SMITH, Philadelphia, *Presiding.*

Tracheo-Bronchial Syphilis, With Report of an Unusual Case. DR. HUBERT ARROWSMITH, Brooklyn, N. Y.

After reviewing the cases recorded in literature, reported the following case of tracheo-bronchial syphilis: The patient, a man, 44 years of age, was admitted to the hospital, November 10, 1915, complaining of shortness of breath and cough, with paroxysmal exacerbations of both. Venereal infection denied. Tubercle bacilli not found in sputum. Urine normal. Hemoglobin, 80 per cent; erythrocytes, 4,928,000; leucocytes, 13,000, with 63 per cent polymorphonuclears; 27 per cent lymphocytes; 7 per cent large mononuclears; 2 per cent transitionals; 1 per cent eosinophiles. Wassermann test was 4 plus. There was irregular fever, from 101 to 104 degrees. Protoiodid of mercury, one-fourth gr. t. i. d., was given, being changed, after a short time, to mercury salicylate administered intramuscularly, with the potassium iodid in increasing doses. Digitalis was necessary most of the time.

Bronchoscopy was attempted December 1, but was abandoned for fear persistence might precipitate an attack of dyspnea, several attacks of which the patient had had since admission. On December 4, against advice, the man left the hospital, but was admitted again, January 4, 1916, in much the same condition as before. From the symptoms and the x-ray examination the diagnosis of broncho-pneumonia was made, and bronchoscopy advised. On January 10, under oil-ether colonic anesthesia (Gwathmey method) direct laryngoscopy showed no lesion of the larynx. A 7 mm. Jackson cronchoscope was passed and a definite and symmetrical diminution of the tracheal lumen was encountered, the tube being held snugly as soon as it entered the trachea, a certain amount of pressure being necessary to advance it. The obstruction was not due to infiltration or edema of the mucous membrane. There was no suggestion of the tracheal rings, and the carina was identified with some difficulty. Considerable pressure was required to enter the primary bronchi, and the orifices of the secondary bronchi were only suggested. This stenosis was absolutely uniform and symmetrical throughout. There was a decided sense of unyielding resistance outside of the mucous membrane. There were no localized constrictions or dilatations, no ulcerations, no scars. Diffuse indurative peri-tracheo-bronchitis seemed to fully describe the conditions found.

The patient was then put upon inunctions of mercury ointment, beginning with half a dram a day and increasing until signs of salivation appeared. Increasing doses of potassium iodid were given (salvarsan being unattainable at the time). The patient's response to the treatment was prompt, and by February 3, 1916, he was up, with very little dyspnea, but still considerable cough. On February 22, he began to cough more, fever and dyspnea returned, and his condition became more rapidly worse, until March 1, when he died. Autopsy not permitted.

The great value of the Gwathmey oil-ether colonic anesthesia in such cases was emphasized.

DISCUSSION.

Dr. Charles Johnstone Imperatori, New York City, opening the discussion, said: "I wish to express my thanks to Dr. Arrowsmith for the honor in asking me to open the discussion on his report of this very interesting case.

"I had the opportunity of endoscoping the case with him and his description of the findings are very exact. One could hardly imagine that the bronchoscope was within the trachea. The appearance of the mucous membrane, being more that of the esophagus. The rings of the trachea could not be made out, and one had to orient himself by identifying the carina. The breath of the patient coming through the bronchoscope, of course, assisted materially. The Gwathmey ether-oil method of anesthesia was ideal in this case.

"Regarding the pathology of this condition, very little can be found in the literature. Adami gives but a few lines to it, and considers the condition very rare. From a perusal of Conner's article, the pathological-histological report of the sections that are of interest to us, showed the mucosa of the trachea and bronchi to be in a hyperplastic state and thrown into polypoid folds or elevations, while the bronchial and tracheal wall was in some places entirely replaced by fibrous tissue, the diagnosis being a diffuse indurative peribronchitis and endobronchitis.

"Symptoms are rather vague and the physical signs fail to give any clue of the marked inspiratory type of dyspnea. Paroxysmal dyspnea at some time in the course of the disease with marked suffocative attacks seem to be characteristic.

"Diagnosis: Paryoxsmal attacks of dyspnea and as the disease advances marked dyspnea, coupled with negative cardiac and renal complications, and with or without positive laryngeal findings, plus a positive Wassermann, should lead one to suspect endobronchial obstruction; this, in turn, may be definitely identified by endoscopy.

"Treatment: As Lues does not confer immunity against acute iodism, potasssium iodid alone should be given with caution. As we know that iodin is remotely irritant to mucous membranes and an inflammatory edema of the larynx, trachea or bronchi may be superinduced on an already irritated respiratory mucous membrane. Salvarsan or its substitutes would have seemed to be the elective method of treatment in this case, followed by the use of mercury, either by inunction or injection."

Dr. Robert Levy, Denver, Colo., thought Dr. Arrowsmith's paper should stimulate inquiry along the lines suggested. No doubt many cases of tracheal and bronchial syphilis had passed unnoticed. It was true that the use of the bronchoscope would doubtless call attention to conditions in the trachea and bronchi which formerly were not recognized,—a point which Dr. Arrowsmith probably wished to emphasize. The placing on record of such cases was important. Cases of ulceration of the trachea had been reported from time to time. He recalled a case of ulceration at the bifurcation of the trachea, with cough, in a policeman. Syphilis was suspected, but the man passed out of his care and the subsequent history could not be reported. In a case of tracheo-esophageal syphilis reported at the meeting of the Middle and Western Sections at St. Louis, it was fair to assume that perforation of the trachea was due to syphilitis ulceration.

Dr. Robert Clyde Lynch, New Orleans, La., had had an experience with tracheo-bronchial syphilis limited to two cases. One case was that of a marine man who had a tracheal fistula, a gumma which ulcerated just below the thyroid gland. The rings of the trachea were exposed as if one had done a very bad tracheotomy operation. There was a definite history of syphilis. The fistula closed and the trachea had remained patulous since. The second case was at the Eye and Ear Hospital in New Orleans. It was the third stage of syphilis, and the gumma involved the fossa of Rosenmüller. Spirochetes were removed from the surface in this location, and a section removed showed evidence of gumatous infiltration. In consultation it was discovered that between the upper and the lower lobes of the right lung there was a dull or quite flat area, quite definite in outline. This was a gumma. In the lower lobe of the right lung there was apparently complete absence of stem bronchi; in other words, there were not so many offshoots from the bronchus as ordinarily found by x-ray examination. This patient had begun to have hemoptysis. Internists in New Orleans had observed a number of cases of gumma of the lungs of a pronounced type, in which no tubercle bacilli were found, in which the area of dullness was not limited to the lower lobe, and in which the polymorphonuclear increase was not as ordinarily observed. The importance of a closer relationship, bronchoscopically, between internist and laryngologist was emphasized.

Dr. Chevalier Jackson, Pittsburgh, Pa., thought it was very fortunate indeed for medical science in general and for bronchoscopy in particular, that this case fell under the observation of such acute and accurate observers as Dr. Arrowsmith and Dr. Imperatori. His personal observations in lues of the tracheo-bronchial tree have been three, and they have been published. In none of them, however, was there such a serious condition as that observed by Dr. Arrowsmith. All of them were mild cases or lesion relics, and all of them recovered. Dr. Boyce, who had had a large fluoroscopic experience, stated, "I have seen through the fluoroscope a ragged shadow to the right of the vertebra at the level of the heart and extending out about two inches in a number of luetic cases and I believe it has some diagnostic value. Beginning malignancy is the only thing likely to be confused with it.". He, the speaker, would like to ask Dr. Arrowsmith in his reply to state whether he believed the quick response to specific treatment with the great relief of the dyspnea could not have been due to the relief of some condition other than the indurative peritracheobronchitis; which, it seemed to him, would be like the luetic fibrotic conditions seen in the larynx and which are not amenable to any form of specific treatment. He heartily agreed with Dr. Imperattori's remarks on postassium iodid; though it was clearly indicated here and doubtless was responsible for the improvement. He believed that everything was done in this case that could possibly have been done, under the circumstances, to relieve the patient. He heartily endorsed Dr. Arrowsmith's suggestion as to calling the attention of internists to the value of bronchoscopy in disease. The utility of the work, both for diagnosis and treatment, was only in its infancy, and he felt that if bronchoscopy was ever to receive its just measure of recognition by the internist, bronchscopists would have to do the work with local anesthesia, in adults, none in children; because the greatest usefulness would be in the early stages in which the relatively mild symptoms of the patient would never seem to the internist to justify general anesthesia. For foreign body work the endoscopist should use whatever form of anesthesia he may think will give him the best results, but in bronchoscopy for disease, general anesthesia was a bar to investigation of any except the most desperate cases.

Dr. John A. Thompson, Cincinnati, Ohio, called attention to the well known fact that a combination of local with general treatment of syphilis of the upper air passages would give prompter results than either alone. In his first case, reported twenty years ago, gummata of the lower lobe of the right lung, the patient had a temperature of 104 degrees, she was expectorating a quart of offensive fluid daily, and was going on rapidly to a fatal end. Internal treatment had no effect, and intratracheal injections were employed. In three weeks the temperature was normal, and in three months the patient had returned to normal health. In such cases as that reported by the essayist intratracheal injections would have relieved the intense dyspnea.

Dr. Eugene L. Vansant, Philadelphia, Pa., recalled a case of syphilis of the bronchi and lungs, with absence of tubercle bacilli, with widely disseminated symptoms in the lungs, without emaciation,—points which may indicate syphilis,—in which recovery followed energetic mixed treatment.

Dr. Thomas H. Halsted, Syracuse, N. Y., had had three cases of tracheobronchial syphilis, two of which had come under his observation before he had begun to use the bronchoscope. Both of these patients were cyanotic and about to succumb. Recovery followed tracheotomy and antispecific treatment. In the third case the patient, a woman of 45 years of age, was cyanotic and semiconscious when first seen by him. She was sent to the hospital, and bronchoscopy was performed. There was ulceration at the tracheo-bronchial junction. This area was covered with crusts similar to those seen in atrophic rhinitis. Nitrate of silver was applied to the ulcer, and general treatment given. Six months later the patient had another attack of dyspnea and died. Intratracheal injections of vaselin or albolen were used to soften the crusts.

Dr. Lee M. Hurd, New York City, cited the case of a man about 50 years of age, who, a short time before, had been sent to him with the history of spasmodic cough. He had had a number of x-ray examinations, which revealed nothing except a peculiar area in one lung. The internist could find no cause for this cough. Bronchoscopy showed that the right bronchus was intensely congested at its junction with the trachea. There was no history of syphilis. In the meantime he developed a gumma on the scalp. In such cases the bronchoscope would make the diagnosis where the internist could not. He had had another case, in a boy about three years old, who had a syphilitic gumma of the trachea. He passed an intubating tube three and a half inches long, holding it in place with a clamp. This was worn for four or five months.

Dr. Jackson, at the request of the president, spoke of the legal aspect of the bronchoscopic examination, in cases anesthetized for other purposes and in whom bronchoscopy was not indicated. He had had an experience years ago which had caused him to go into the legal phases of consent to operation. He did a tracheotomy on a child whose heart had stopped. He had gotten consent to the mastoid operation, but the father brought suit on the ground that the tracheotomy was done without consent. The suit hung over his head for two years, and caused him a good deal of worry. Finally the man's attorney, who happened not to be a "shyster," called on him about the case and was told that six medical men were present, all of whom would testify that the operation was necessary to save the patient's life. The attorney advised his client that he had no ground for action, especially as the child was alive and well. Since that time he had always insisted on written consent, covering everything that might be deemed necessary, by himself or his associates. He would not presume on this account to do a purely experimental operation or one not urgently necessary. If the parents were accessible he would ask their consent to any additional procedure if time permitted; but often the children were left at the hospitals by their parents. One would certainly be subject to suit for malpractice for an experimental operation, or for any operation that is not necessary. Doing anything merely for the development of one's technic was a matter for one's own conscience.

Dr. Arrowsmith, in closing the discussion, said he attributed the unpleasant after-effects of the iodins to the fact that the initial dose was too large. Answering Dr. Jackson, he said there was no congestion or swelling of the soft parts, and apparently no syphilitic lesion there. Undoubtedly the prompt yielding was in part due to the mental effect of the treatment. The mere mechanical stretching of the trachea and bronchi temporarily relieved the patient. Dr. Thompson's suggestion was a good one, but he did not think local medication would have done any good in the case reported. He had used intratracheal injections for twenty years in suitable cases. He employed for this purpose vegetable oils, medicating them in various ways. Mineral oils were not satisfactory in these cases.

Dr. Chevalier Jackson, Pittsburgh, Pa., had been very much interested, three years ago, in a paper read by Dr. Lynah before the New York Academy of Medicine on the endotracheal removal of foreign body cases of diphtheritic membrane. The speaker had not himself seen such a case, though he had encountered two cases of endotracheal diphtheria, and many cases sent in for post-diphtheritic laryngeal stenosis. There should be connected with institutions where diphtheria is treated, men competent to deal with these cases by endoscopic methods, and they should have and use direct intubation instruments of Mosher and Lynah. Direct laryngoscopy should be used for diagnosis and treatment, and without anesthesia, general or local. It was out of the question to get an internist to consent to anesthetize a patient in cases of suspected laryngeal diphtheria. Bronchoscopy was not the severe ordeal that some had supposed, as was evidenced by the report of Dr. Lynah that some of these patients went to sleep on the table with bronchoscope *in situ*.

Tracheo-Bronchial Diphtheria (With Lantern Slide Demonstration). Dr. Henry Lowndes Lynah, New York City.

(Published in the October, 1916, issue of The Laryngoscope.)

DISCUSSION.

Dr. Harris P. Mosher, Boston, Mass., had had only two cases, as compared with the thirty-six reported by Dr. Lynah, but in a measure he had gone over the same ground. In his own two cases, the one which was tracheotomized was one which recovered. Both were operated upon without anesthesia. To have the tracheotomized patient recover was rather contrary to the rule. The membrane, in that case, was removed with forceps. When he had finished with these two cases he devised an instrument for sucking out the membrane, but it had never been used. It was striking, as Dr. Lynah had pointed out, and as Dr. Jackson had emphasized, that these patients go to sleep on the table as soon as the obstruction is relieved.

Dr. Hubert Arrowsmith, Brooklyn, N. Y., had stopped doing intubations several years ago. Dr. Lynah's presentation of this work deserved the praise of laryngologists all over the world.

Dr. Ross Hall Skillern, Philadelphia, Pa., reported a curious case of diphtheritic membrane in the lung simulating a foreign body, diagnosed and removed by the bronchoscope.

(Published on page 100 in the present issue of The Laryngoscope.*)*

Dr. J. B. Greene, Asheville, N. C., said that he was a follower of Place, of Boston, in the use of large doses of antitoxin. He was also a follower of Park, of New York, in the advocacy of the intravenous administration of antitoxin in severe cases of diphtheria such as the essayist had described. It was difficult to see why there should be greater shock following the intravenous administration of antitoxin, for the pain was certainly less,—an important element in shock. In his experience he had seen no evidence of shock. There was experienced, at times, particularly in very young children, difficulty in finding the vein with the needle In all cases of antitoxin administration it was well to ask if there was a history of asthma, hay fever, or sensitiveness to the emanations from the horse.

Dr. E. Fletcher Ingals, Chicago, Ill., had had several cases in which the patient's life had been saved by tracheotomy, performed without anesthesia, and these patients had told him afterward that they suffered none or very little from the operation. Several of these patients were so far gone that he was sure they felt nothing.

Dr. B. R. Shurly, Detroit, Mich., had had an experience of five years with several hundred intubations. The wonderful progress that had been made in the use of antitoxin, with the technic becoming more and more perfect, with the earlier and earlier use and the larger and larger doses of antitoxin, had reduced the mortality so that the last series of cases showed a mortality of only twenty per cent. It was within that twenty per cent that one found the cases of endotracheal diphtheria, with extension of the membrane and the development of broncho-pneumonia, and these were the patients who would be relieved and whose lives would be saved by the method which Dr. Lynah had presented. The development of bronchoscopy and its use in diphtheria hospitals should be a specialty within itself. These little children, with lowered vitality and weakened hearts, must be managed with great gentleness, the operation must be very quickly performed, and the technic must be carefully considered. He had many intubation cases in which casts of the bronchi and trachea had been expelled after the removal of the membrane. The painting of the bronchi and trachea with antitoxin after the removal of the casts, to prevent the reformation of the membrane, was a distinct advance and should be tried.

Dr. John F. Barnhill, Indianapolis, Ind., emphasized the fact that these membranes are foreign bodies, and as such should be removed. Tracheotomy, in these cases, was not an entirely hopeless matter. He had had seven cases in one year in which he resorted to tracheotomy, with six recoveries. In the fatal case death was due to the failure of the nurse to properly remove the tube. These cases were not always found in the best hospitals, and sometimes it was necessary to employ tracheotomy. It was the next best thing to the method proposed by Dr. Lynah.

Dr. Robert Clyde Lynch, New Orleans, La., had had forty-two tracheotomies with no deaths due to the tracheotomy. One was done in a taxicab. The patient had coughed up the intubation tube, and while being taken to the hospital, where something more could be done for him, he stopped breathing. The taxicab was halted, fortunately, under an electric light and tracheotomy immediately performed. The patient was still living. In another case, in which the membrane involved the bronchi, he would put in the bronchoscope and pick out a piece of the membrane whenever breathing was obstructed. Six times during the week in which he slept in the room with the patient, the boy was perfectly dead, and each time he brought him back to life by removing pieces of the membrane which had come in front of the tube. This child, also, was living. In all these cases except the taxicab case the operation was performed in the hospital, with every possible care. In none was there subsequent obstruction or stenosis, and all had recovered with good voices. In view of these facts, it seemed to him that tracheotomy did not present 100 per cent mortality. He operated entirely without anesthesia. He used antitoxin intravenously when he could back it up with aromatic spirits of ammonia or caffeine, followed by strychnia.

Dr. Arthur I. Weil, New Orleans, La., said in many instances the facilities for bronchoscopy were very limited, and in such cases a good tracheotomy was better than an unsatisfactory bronchoscopy. He had had only one death, in a case in which the membrane extended down into the bronchi. Regarding the impunity with which bronchoscopy could be done under local anesthesia or with none at all, it was surprising to see how easily the instrument could be passed. Following the work of Dr. Skillern, he had made it a routine practice to examine all cases with obscure symptoms. It had been surprising to him to see how easily patients in clinics would sit down on the stool and take the tube without any discomfort. He thought bronchoscopy was entirely too little employed in ambulatory clinics.

Dr. Lynah, in closing the discussion, said the point made by Dr. Greene, with reference to anaphylaxis, was well taken. Some patients after a subcutaneous injection of antitoxin would have a severe reaction and very stormy symptoms of anaphylactic shock, but he had never seen a fatal result follow the subcutaneous method. Reactions were equally severe in some cases by the intramuscular injection, but the shock was nothing in comparison to the intravenous injection, which was at times exceedingly dangerous and followed by fatal termination. Large doses of antitoxin were the rule in all of the hospitals at the present time, but the general condition of the patient and the duration of illness should be taken into consideration and the dose judged accordingly. Formerly, at the Willard Parker Hospital, Dr. W. H. Park advocated small doses of antitoxin frequently repeated at intervals of twelve to eighteen hours, until the patient showed signs of improvement; then later on he followed the method at Boston City Hospital and gave large doses of 20,000 to 30,000 units in severe cases, one initial dose, and recommended the repetition of the dose was not necessary, while to-day he believed that an intravenous injection ot 10,000 units of antitoxin was sufficient for the great majority of cases. The speaker believed in intravenous injection of antitoxin in selected cases, but it was certainly contraindicated in cases of long standing, in whom there was marked prostration at the time of admission to the hospital. Early in the disease the patient was stimulated by the toxemia and intravenous injection of antitoxin would do no harm, the element of shock being soon overcome; but later in the disease of four or five days' duration, accompanied by profound prostration, the further element of shock added by the intravenous injection was not only harmful but at times was followed by fatal result.

Replying to Dr. Barnhill, Dr. Lynah said he was not speaking of the laryngeal type, but of the tracheo-bronchial involvement, and these were the cases that died after tracheotomy. Not only the tertiary bronchi and bronchicles, but the lung as well, were involved in these cases. The necrotic lung would certainly not recover.

He had been interested in Dr. Skillern's case, but he did not know that the membrane could last so long and the case recover without antitoxin.

Referring to Dr. Lynch's use of caffeine, so far as he knew this was one of the most insoluble of drugs and was of little use hypodermically. He preferred the use of small doses of morphia for the stimulating effect and also to counteract shock. He also used camphor in oil. He had gone on record more than once in saying that any slowly progressive dyspnea should be looked upon with considerable degree of apprehension, and when one was unable to account for the cause of the dyspnea a direct laryngeal and bronchoscopic examination should be made. While it was not a difficult procedure to remove the mechanical obstructing foreign body membrane, the whole credit for the ultimate outcome of the cases belonged entirely to the house staff and nurses of the hospital.

Bronchoscopic Postulates. Dr. Chevalier Jackson, Pittsburgh, Pa.

Dr. Chevalier Jackson, Pittsburgh, Pa., offered the following suggestions in the form of postulates, emphasizing that they are merely tentative, given for the purpose of eliciting discussion, and not to be taken as rules to be followed:

1. Anesthesia should be left to the choice of the operator in the particular case. Diagnostic direct laryngoscopy in children should be done without anesthesia, general or local. Cocain and morphin are dangerous in very young children. Novocain and alypin may be used.

2. An antiseptic technic should be carried out as thoroughly as in laparotomy.

3. Bronchoscopy, ordinarily, should not be continued longer than thirty minutes in one under twelve years of age. Unless for urgent reasons, bronchoscopy should not be repeated at shorter intervals than five days in children under five years of age. Both bronchoscopy and esophagoscopy may be done in the new born, if necessary, the duration not exceeding 15 minutes, except in case of bronchoscopy for the maintenance of respiration.

4. Four or more very careful twenty-minute bronchoscopies, at intervals of a few days, in an infant, may be fatal, no matter how carefully done.

5. There are no absolute contraindications to bronchoscopy or esophagoscopy in foreign-body cases. Many conditions (aneurysm, for example) may render endoscopy for disease inadvisable, and in foreign-body cases may justify its postponement.

7. The primary requisite for bronchoscopy is gentleness.

8. A foreign body should not be pulled upon until the bronchoscopist has a clear idea of the mechanical problem, nor until he is certain that the foreign body is free to be moved without inflicting trauma.

9. It is dangerous to pull on a tack, pin, needle, nail, or other sharp pointed object until the point is in the tube-mouth. Hasty and violent attempts at removal are unjustifiable, especially since in most cases of foreign body in the bronchi the patient will live many months if no trauma is caused.

10. Full-curved hooks are to be used with the greatest caution, lest they catch inextricably in branch bronchi.

11. Laceration or perforation of the thoracic esophagus is almost invariably fatal.

12. The motto of the bronchoscopist should be, "If I can do no good, I will at least do no harm."

Accidents in Bronchoscopy. Dr. Henry Hall Forbes, New York City.

Dr. Henry Hall Forbes, New York City, in discussing his own experience and that of other operators with accidents in bronchoscopy, arranged the cases under the following divisions: (1) Accidents during the anesthetic stage, or previous to the actual instrumentation. (2) Accidents during the instrumentation either for operation or examination. (3) Accidents occurring in the post-operative stage of the work. In addition to these accidents to the patient, he detailed two cases of accident to the operator, in one of which a cocain solution being used in a bronchoscopic examination was coughed into the eye of the operator, and in the other a sharp steel lace pin was coughed out through a bronchoscopy tube with the force of a dart from an air rifle, hitting the lens of the operator's glasses.

Sudden Death During Bronchoscopy. A Preliminary Report of a Physiological Study. Dr. Charles Johnstone Imperatori, New York City. (Published in the November, 1916, issue of The Laryngoscope.)

DISCUSSION.

Dr. Lee M. Hurd, New York City, emphasized the fact that the vagal reflex varies widely in different individuals. In the average it was a very sensitive reflex; simply extending the head would produce slowing of the heart beat and raising of the blood pressure. There was vagal irritation, to a greater or less degree, from the time the head was extended for passing the bronchoscope, but this was increased as the tube passed over the base of the tongue, and still more increased as the tube entered the larynx, trachea and bronchi. Atropin or hyoscin and morphin would control the vagal reflex, and should be used in appropriate cases, but this did not give license to rough usage of the parts.

Children, as Dr. Jackson had repeatedly asserted, could have the tubes passed better without anesthesia. The speaker presented a pearl button, two centimeters in diameter, which was removed from the upper portion of the esophagus of a child of two years old without anesthesia and also without distress. The fatal case reported by Dr. Imperatori probably was due to laceration or rupture of a bronchus from clumsy use of the tube. As Moynihan has said, "The perfect surgeon must have the heart of a lion and the hand of a lady; never the claws of a lion and the heart of a sheep."

Dr. Stanton A. Friedberg, Chicago, Ill., classified accidents associated with bronchoscopy as: (1) Trauma, such as the too forcible introduction of the speculum or endoscope resulting in supra- or sub-glottic edema; forceps with teeth catching in the mucous membrane; and perforation of a bronchus. (2) Mechanical accidents, due to defective or deficient apparatus. (3) Accidents due to anesthesia. Most of the accidents reported were due to general anesthesia. He had had one death in which the anesthetic was given by an expert. The patient was a child of two years of age, with an impacted bean in the left bronchus. The bean could not be removed easily, and during the manipulation the child collapsed and could not be revived. He heartily agreed with Dr. Jackson regarding the question of anesthesia. He had ceased to use general anesthesia in patients with foreign bodies in the respiratory tract, and was able to operate just as easily and without any more discomfort to the patient. (4) Accidents due to hemorrhage. He recalled the case of a man, forty years of age, who, in an intoxicated sleep, had aspired a tooth bridge, which lodged in the left bronchus. While cocainizing the larynx, there was a hemorrhage from the lung. The bronchoscope was passed but the cough and constant flow of blood prevented any successful effort. A second attempt under fluoroscopic bronchoscopy was also preceded by a flow of blood, but the foreign body was found and removed. (5) Alarming symptoms, such as strangulation, might occur from the removal of a foreign body from below a stricture, thus releasing a large amount of pus. (6) On account of subglottic edema and the necessity for the use of a small bronchoscope, it might be very difficult to withdraw a foreign body through the subglottic space. The foreign body might slip off of the forceps repeatedly, so that it might be necessary to do a tracheotomy to secure its removal. Subglottic edema resulting from the use of too large a bronchoscope, or from the repeated passage of one, might necessitate intubation or tracheotomy within a short time after the examination was made.

Dr. Harris P. Mosher, Boston, Mass., would modify Dr. Jackson's postulate regarding the use of general anesthesia in esophageal examinations. He had had no mishaps in tracheal work, and in two esophageal cases.

in the early days of esophagoscopy. The esophagus was curetted, became infiltrated, an abscess followed, with fatal result. He did not feel, however, that general anesthesia was as dangerous in esophageal work as one would infer from Dr. Jackson's book. He would like to add another postulate, namely, "that no esophageal examination is complete unless esophageal ballooning is employed."

Dr. George L. Richards, Fall River, Mass., cited a case in which a child, eight years old, had a metal pencil point in the right lower bronchus. The specialist in charge made an unsuccessful attempt to remove it with the Killian-Brunings instruments. A second attempt was made by a gentleman of considerable experience, who worked an hour without being able even to grasp it, using the Jackson instruments. The x-ray showed just where the object was, but it could not be grasped. At a later date another attempt was made, more than an hour being consumed, when, without much warning, the respiration became bad and the boy died on the table. At autopsy the pencil-point was found pushed down to the pleura.

Dr. J. W. Jervey, Greenville, S. C., referring to Dr. Jackson's postulate in which the time of operation in children under five years of age was limited to twenty minutes, hoped that an extra five or ten minutes might be added for the benefit of those less expert than the essayist. Various handicaps might be encountered in the course of the operation which would make such an extension of time necessary. Mucous and blood sometimes had to be removed, great gentleness and care had to be exercised, and sometimes it was necessary to locate a foreign body which had not been located by x-ray, and this alone would consume fifteen minutes.

Dr. Richmond McKinney, Memphis, Tenn., was glad to have an opportunity to express his approval of Dr. Jackson's advocacy of doing broncho-esophagoscopy, whenever possible, without general anesthesia. He had noticed in the current issue of the *Journal of Laryngology*, that Hill, in reviewing Dr. Jackson's recent book on broncho-esophagoscopy, had criticised very unfavorably the position taken by Jackson that most broncho-esophagoscopies can be done very satisfactorily without general anesthesia. Hill advocated the use of chloroform, which certainly would not meet with approval on the part of American broncho-esophagoscopists. English laryngologists generally seem to favor chloroform in this kind of work. The speaker had lately been doing broncho-esophagoscopy practically altogether without general anesthesia, and recently had removed an orange seed from the trachea of a child one year of age, and a large sweater button from the esophagus of a child twenty months of age, with no anesthesia of any kind, and apparently without discomfort to either patient, and with no difficulty to himself. He believes general anesthesia to be the cause of many accidents in broncho-esophagoscopy. His personal experience had been that the removal of foreign bodies from the esophagus is much more dangerous than where the foreign body is located in the trachea or one of the bronchi. In one case of removal of a large metal overall button from the esophagus of a child of two years of age, which he had already reported, there was some traumatism of the mucous membrane back of the larynx, and although the attendants in the hospital were warned of the possibility of edema, and told to advise him should the child develop symptoms of asphyxiation, the patient was permitted to slowly die from this cause, when a tracheotomy probably would have saved the child. Under any and all circumstances, broncho-esophagoscopy deserved the exercise of the greatest care to avoid traumatism, and should the foreign body not be secured within a comparatively few minutes after manipulation is begun, it was better to postpone further efforts until another day, rather than to subject the patient to the attendant danger, especially when general anesthesia was used.

Dr. Thomas Hubbard, Toledo, Ohio, had experimented a few years ago with a snare for closing a safety-pin, and had found that it could be done, but cautioned against this method, as it might engage in such a manner that it could not be released. The curved hook was unsafe in bronchoscopic work. The right-angle hook was safer, as it could always be released. The rule held good in all endoscopic operations: Never grasp, or rather never get tangled up with, a foreign body in such a manner that prompt release cannot be effected. Progress in this art tended toward simplified instrumentation.

Dr. Jackson, in closing the discussion, quite agreed with Dr. Imperatori as to the value of these investigations. If deaths on the table were frequent, bronchoscopy would not hold the place it does as a life-saving operation with an exceedingly low mortality, if considered apart from the condition for which it is done. Therefore, the determination of the cause of each and every death became of paramount importance. If Killian's first bronchoscopy had ended as did this case, bronchoscopy would probably not be performed to-day. Fortunately, the unfortunate cases were not the first cases. Neither Dr. Patterson nor the speaker had had a death on the table such as that described by Dr. Imperatori. Possibly their turn had not yet come; but in any event, even he, the speaker, could not speak from experience. Theoretically, the chief causes of sudden death on the table during bronchoscopy would be asphyxia due to cutting off all the air in the case of using a bronchoscope without side openings, and the anesthetic. The use of excessively large tubes he had always considered dangerous. Any kind of anesthesia rendered it difficult to restore arrested cardiac or respiratory action arising from any cause whatsoever. The experimental data of Dr. Imperatori were important, and his deductions seemed to the speaker to be warranted. All the points made by Dr. Forbes deserved especial emphasis.

Dr. Mosher had added an important postulate with regard to esophageal ballooning. Dr. Hubbard's postulate was a very important one and should be added to the list. Others could be worked out from the discussion if time permitted. The point raised by Dr. Jervey, with reference to extending the duration of the operation, was a very important one. Dr. Richards had cited a case in which the operation was prolonged until the patient died. The criticism of Dr. Jervey expressed what all had felt at times. Success seemed so near that one wanted to keep on a few minutes longer; and precisely therein lay the danger. The question was when to stop and wait for another day. As many fifteen or twenty-minute bronchoscopies as needed might be done without harm, whereas one of an hour might be fatal. If a patient was asphyxiating from the foreign body it must be gotten out, by tracheotomy or whatever means necessary, in order to preserve the patient's life; but in most other cases there was no urgent need for immediate removal, and it was better to desist and try again. Success might be prompt at the next attempt. He was glad to have Dr. Hurd's endorsement as to the needlessness of an anesthetic for esophagoscopy for foreign body.

Dr. Imperatori, in closing the discussion, advocated the use of atropin, previous to bronchoscopy. The experience of the different speakers seemed to show that the hypothesis which he had advanced could be translated as a fact, by further investigation, and hoped that at some future meeting the opportunity would be extended to him to present a completed study.

Diagnosis and Treatment of Syphilitic Affections of the Acoustic Nerve, With Special Reference to the Use of Salvarsan. Dr. George M. Davis, New York City.

(Published in the August, 1916, issue of The Laryngoscope.*)*

DISCUSSION.

Dr. Norval H. Pierce, Chicago, Ill., said the diagnosis of syphilis of the auditory apparatus should not cease with the tuning-fork examination. In every case giving the picture of syphilis of the auditory apparatus, with or without a history of chancre, the cerebrospinal fluid should be examined. With or without negative or positive Wassermann from the blood, the cerebronspinal fluid should be subjected to the Wassermann test. It was a good practice to give liberal doses of salvarsan in all suspected cases, beginning, of course, with a minimal dose. In the Illinois Eye and Ear Infirmary, with or without a history of luetic infection, with negative Rinné, both air and bone conduction being diminished, with lowering of the tone-limit, without the history of any disease which usually produces degenerative neuritis, a series of patients were subjected to the examination of the cerebrospinal fluid. The majority showed positive Wassermann when the cerebrospinal fluid was examined. Salvarsan had not greatly changed the prognosis over that given by the older methods. It depended entirely upon the process which produced the auditory symptoms—whether it was merely a hyperemia at the beginning of the infection, or a degeneration of the axis cylinder of the nerve—and the time at which the treatment was begun. The prognosis, in other words, was in direct ratio to the time of the onset and the beginning of the treatment. He had yet to see an old case, with considerable degeneration, make material improvement either with salvarsan or with mercury. In early cases, where the degeneration was slight, and where interference with audition was slight, a great deal could be accomplished with salvarsan or mercury. He had seen but one case in which the auditory symptoms were made much worse by the use of salvarsan. Another dose had been beneficial.

Dr. Arthur B. Duel, New York City, in opening the discussion, said: "It is impossible to adequately discuss so vast a subject in so short a time. I should feel that it had not been properly presented unless I brought out the essential points of several monographs giving the results of the work done by Swift and Ellis at the Rockefeller Institute.

"Some years ago the rapid succession of three or four cases showing intense manifestations of syphilis involving the eighth nerve, and in some cases other cranial nerves, early in the secondary stage, following the use of salvarsan, led me to look up the literature of the subject. It was just at the time when the enthusiastic use of salvarsan everywhere had stimulated closer observations of all syphilitic manifestations.

"Although the subject of cerebral syphilis had engaged the attention of many observers in Italy, Germany, France, England, and America, even as far back as 1650, it was only since salvarsan had been exploited that it had been vigorously discussed. This was partly due to the serious consideration of the question whether or not the administration of salvarsan was the real cause of some of the cranial manifestations, rather than the syphilis. Vigorous discussion *pro* and *con*, by Benario, Ehrlich, and score of others, has stimulated a very careful observation of the cases and has led to a much better position regarding the diagnosis and treatment of all syphilis.

"Perhaps the most important result, so far as otologists are concerned, has been the definite emphasis of one point, *i. e.*, that syphilitic signs in the eighth nerve, as in any other cranial nerve, really mean *cerebrospinal syphilis*—a most dangerous form; a most difficult form to eradicate; and, one requiring the most skillful laboratory examinations at frequent intervals, accompanied by the most careful management in its treatment.

"For instance, it has been very definitely shown that these local foci in the brain (involving any of the cranial nerves) may become latent, as a result of inadequate dosage, and only manifest themselves after considerable periods. The presence of these isolated areas can be demonstrated by adequate laboratory examinations, and the proper treatment of them may save most important functions, even the life of the patient.

"It follows, then, that the discovery by us of these early lesions in the auditory apparatus should not be followed by casual or inadequate therapeutic measures.

"We owe it to our patients—and to our reputations—either to acquaint ourselves with the very latest work in diagnosis and treatment, with control tests to discover if the disease is eradicated—or to send them to experts who will do so.

"Ellis and Swift, at the Rockefeller Institute, have done some most exact work on the subject. The evidence of their investigations would seem to show, that, for a disease which is responsible for so much human suffering and death, and for which we have *perfectly definite specific treatment*, the majority of cases are treated in a most inadequate and really haphazard way. Doubtless most of you are familiar with their published monographs, but if not, I do not think I am going too far to say that you are unfair to both yourself and your patient, when you treat an otitic syphilitic manifestation without having acquainted yourself with their methods of examination and treatment. They are not too difficult for anyone to adopt, and the satisfaction of knowing we have done all in our power to relieve such an infection should stimulate us to familiarize ourselves with the technic, or to refer our cases to those who have done so.

"I append the titles of the published monographs of these investigators.*"

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*Ellis, Arthur W. M.—"Secondary Syphilitic Meningitis." Jour. Am. Med. Assoc., 1912, LIX, 1263-1267.

Swift, Homer F., and Ellis, A. W. M.—(1) "The Intensive Treatment of Syphilis." Jour. Am. Med. Assoc., LIX, 1251-1254; (2) "The Cerebrospinal Fluid in Syphilis." Jour. of Experimental Medicine, 1913, XVIII, No. 2;

Dr. Pierce wished to correct Dr. Caufield's impression concerning the ill effects from the use of salvarsan. His contention was that the ill effects were more likely due to inadequate doses. It was very necessary in auditory syphilis to precede the injection of salvarsan with the administration of calcium iodide, and then begin with a minimal dose of salvarsan.

Dr. George W. Mackenzie, Philadelphia, Pa., referring to the question of shortened bone conduction, associated with a relatively normal air conduction found by Dr. Davis as an early sign of syphilis, said in his experience the bone conduction is never shortened without a proportionate amount of shortening of the air conduction. As pointed out by Dr. Davis, some authors had found the Rinné positive and others had found it negative. The answer to this apparent contradiction in findings was due to the fact that those who found the Rinné positive were examining cases of mild grade nerve deafness, with bilateral involvement, while those who found the Rinné negative were examining cases of more pronounced deafness or unilateral cases, or cases with unequal intensity or deafness on the two sides.

In a case of unilateral inner-ear or nerve deafness, the typical findings showed a positive Rinné when the deafness was of slight or moderate degree. Eventually if the process increased to total deafness the Rinné became negative; that is, no air conduction and a tolerable degree of bone conduction. This bone conduction, however, was not present because of any real hearing in the affected ear, but was due to a cross-conduction from the opposite side. The more intelligent patient recognized that though he appeared to hear the fork over the affected ear, he referred the sound to the unaffected ear. So that in this way from the normally positive Rinné (with air and bone both shortened) that was typical of slight degrees of involvement up to the complete deafness with negative Rinné, all varieties of Rinné might be found.

In the case of bilateral involvement of inner ear or nerve of equal intensity, the Rinné remained positive on the two sides throughout, except in the case of complete bilateral deafness, when it was neither positive nor negative.

In bilateral deafness the long bone conduction was more pronounced than in unilateral deafness, and though there was always some borrowed bone conduction from the opposite side, there was less to borrow in bilateral cases.

Tinnitus could be present in a case of total nerve deafness of syphilitic or other origin. Such cases he had seen and reported. This was to be explained by the presence of a destructive lesion in the inner ear associated with an irritative lesion in the nerve.

He emphasized the importance of the Galvanic test in the study and diagnosis of inner ear and nerve deafness. It was the only available method of differentiating between disease of the inner ear and the eighth

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(3) "The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinous Injections." Archives of Internal Medicine, 1913, Vol. 12, 331-345; (4) "Involvement of the Eighth Nerve in Syphilis of the Central Nervous System." Jour. Am. Med. Assoc., 1915, LXIV, 1471-1477.

Swift, Homer F.—"Intraspinal Therapy in Syphilis of the Central Nervous System." Jour. Am. Med. Assoc., LXV, 209-314.

nerve; besides, it was a valuable test for determining whether the pathologic process was taking a favorable or an unfavorable turn by comparing the findings from time to time. It had the added advantage of being a therapeutic agent.

Spontaneous Recovery in Cerebro-Spinal Meningitis of Otitic Origin, With Report of a Case. Dr. Samuel McCullagh, New York City.

(Published in the December, 1916, issue of The Laryngoscope.*)*

The Relief of Otitic Meningitis by Sub-Temporal Drainage, With a Report of Two Cases of Recovery from Streptococcus Meningitis by This Method. Dr. Eugene A. Crockett, Boston, Mass.

Dr. Eugene A. Crockett, Boston, Mass., presented this report, as a continuation of a former contribution, entitled, "The Treatment of Acute Lepto-Meningitis of Otitic Origin in Early Operation and Subdural Drainage, with a Report of Six Cases." The writer now reports three cases of acute streptococcus meningitis operated on by his method, with recovery, one operated upon by himself, and two by his assistants at the Massachusetts Eye and Ear Infirmary. In addition to these three successful cases, he operated, during the same period, on two cases in which the patients died after operation. He had refused to operate in three other cases which were obviously moribund when seen. The operative recoveries in the last year were fifty per cent of the cases treated, which was probably accidental and unusually high, the twenty per cent of recoveries given in his first paper being more nearly correct.

Certain points in the operative technic of these cases make or mar the success of the operation. In the earlier operations his principle difficulty was in the handling of the cerebral hernia which instantly forms after the dura is opened, in cases of increased intra-cerebral pressure. Attempts to reduce this hernia often led to laceration of the brain, the operative results being poor in consequence. The opening in the dura should be small, not over one inch or one and a half inches, and the decompression opening should be made low and as near the upper border of the external auditory canal as possible. The dura should be opened at the bottom of the bone opening. The amount of pressure in the brain can be gauged by the finger tip pressed against the dura. The lumbar puncture is made, by an assistant, previous to opening the dura, the operator keeping the tip of his forefinger on the dura in the compression opening. The cerebro-spinal fluid is allowed to run from the lumbar opening until the intra-cerebral pressure is distinctly subnormal. According to circumstances, 30 to 40 cc. may be withdrawn. The intra-cerebral pressure being reduced, a slit is made in the dura and the drain is inserted between the dura and the pia, along the top of the petrous portion of the temporal bone. This is passed along nearly to the internal auditory meatus, about an inch or an inch and a half. The writer has not attempted to sew the dura. nor has he attempted to approximate the external skin flaps too carefully. Not much more than fifteen minutes need be consumed in this operative procedure. Every minute over that counts materially against the patient's recovery. The subdural drain may be left in for a week or ten days. The important point in the after-treatment of the cases is the free use of lumbar puncture. A marked increase of cerebral pressure prevents free drainage from the subdural drain. Where the patient presents cerebral pressure symptoms, such as headache, Cheyne-Stokes respiration, delirium, or convulsions, lumbar puncture is done twice a day, if necessary, 20 to 30 cc. of fluid being drawn off each time. This has reference to adult cases. Recovery undoubtedly depends upon the unhesitating resort to the free use of lumbar puncture at the proper time.

DISCUSSION.

Dr. Wendell C. Phillips, New York City, had thought, until he heard Dr. McCullagh's paper, that recoveries called spontaneous were due to some recuperative power on the part of the patient. Cases had been reported from time to time of recovery having taken place in cases in which there was no doubt as to the diagnosis. He had seen such a case recently, under the care of Dr. Friesner, on his service at the Manhattan Eye and Ear Hospital. He called attention to two cases recently reported in the *Journal of the American Medical Association*, in which dural drainage was established by lumbar laminectomy. Both cases recovered, although the cerebrospinal fluid gave a positive culture. He was still somewhat skeptical as to whether the operation had very much to do with the recovery. Lumbar puncture, in his opinion, had much to do with recovery in many of these cases.

Dr. Ewing W. Day, Pittsburg, Pa., had been working at this problem ever since he had been a member of the Society, and had tried the various new methods which had been presented from time to time. Despite the general skepticism regarding the subject, he hoped that Dr. Crockett's method would stand the test. Dr. Crockett was to be congratulated upon having these cases, and upon the procedure detailed.

The symptoms in meningitis were those which come from pressure and from the poisoning of the blood stream. In Dr. Crockett's former paper, doubt had been cast upon the diagnosis; the cases now reported were undoubtedly cerebrospinal meningitis. Many mild cases, the speaker believed, were never recognized, only the most intense and the grosser ones being known. This was contrary to what he had stated a few years ago.

The important thing in connection with meningitis was the cerebrospinal fluid stream, the method of its flow and the direction it follows. This was given in detail, and the experiments of Weed, of Johns Hopkins, with coloring matter injected into the brain, mentioned. In the majority of cases, he believed, infection takes place above the base, the upward flow of the cerebral fluid tending to keep it from the base. When the fluid was drawn off from below, if the force of the stream going up over the cerebrum was sufficient to hold the infection up, naturally a sterile fluid would be obtained. The course of the infection might be on the surface of the brain or be absent, but all postmortems showed an immense volume of pus at the base of the brain, where large arachnoid spaces are located. This condition seemed to be common in all cases of fatal meningitis.

Dr. Crockett had certainly added greatly to the technic of sub-temporal drainage, and the repeated tapping to reduce the pressure was a distinct advantage. He cited a case, reported before this Society, in which the patient recovered. There was no doubt about the diagnosis so far as could be determined by present methods of diagnosis. Two years later the patient returned with a re-filling of the cerebellar abscess, and the condition progressed to death. Just at that time Barr, of Edinburgh, suggested washing through the ventricles to a lumbar canula. The speaker tried this plan in the case mentioned, when he knew that the patient would die. All preparations were made, and a solution of methylene blue was injected, to see where it went. It was put in the lateral ventricle and came out with the lumbar canula. Autopsy showed that the whole of the cerebral area was colored perfectly blue, excepting an area where the former dural drainage had been done. Microscopic examination showed that there had been an inflammatory process in this area which was not stained. That case, which he had reported as cured, was one in which the infection had not gone to the base and was of limited area. In another case, in which he employed the Haynes operation, in endeavoring to drain the cistern in front of the medulla, which could not be reached by this method. Some fused wire was twisted into a spiral form, three or four strands being used, and, by cutting away the petrous portion of the bone, he was able to reach the point, just over the basilar process, which he had not been able to reach by the Haynes method. After several days the patient died, and at autopsy it was found that there was less pus in the cisterna magna and other cisterns than in most cases.

Dr. E. B. Dench, New York City, said that his first subdural drainage for meningitis was done unconsciously. He had operated upon the patient for a temporo-sphenoidal abscess, and not finding the abscess had inserted a drain into the subdural space. The patient recovered. This was the first time in which a decompression operation had been performed for a leptomeningitis. There was another sort of a decompression which he had found of value, namely, the exposure of a large area of dura without opening the dura at all. As great an authority as Ballance had said that decompression could not be effected without division of the dura. The speaker had been of the same opinion until he had a case at St. Luke's Hospital in which an undoubted meningitis was present, as proved by lumbar puncture. The patient was blind, and presented all the characteristic symptoms of meningitis. In this case a mastoid operation was performed, with extensive exposure of the dura. This patient made a complete recovery. In a second case at St. Luke's, a patient had all the clinical symptoms of meningitis, including stiff neck, Kernig sign, headache, and a temperature of 104. Upon spinal puncture, the cell count of the spinal fluid was 2500. At Dr. Dench's suggestion, one of his associates performed a mastoid operation and exposed a large area of dura in the middle fossa. All the symptoms of meningitis disappeared, the spinal fluid became normal, and the boy made a complete recovery.

These cases convinced him that a certain amount of decompression was obtained by exposing a large area of dura without opening it. He had had only one recovery from true decompression in meningitis, but in numerous cases this procedure had undoubtedly prolonged life. Any operation which prolonged life for even four or five days, was a step in the right direction and was an indication that it might be possible, by improved technique, to bring about a recovery.

Referring to Dr. Day's remarks concerning the Neumann operation, Dr. Dench mentioned one case which had been operated on by one of his assistants, Dr. Perkins, in which the patient made a complete recovery. This case was operated on very early, the diagnosis being made practically upon the cytology of the spinal fluid. In other case, operated upon by the speaker by a similar method, the patient had died. This case was operated on a little later in the course of the disease. Accumulated personal experience led the speaker to believe that the Neumann operation, in order to be of value, must be performed very early—as soon as the cytology of the spinal fluid was indicative of meningitis. The speaker emphasized the fact that it was only by persistently operating upon these cases that the profession would be able to formulate, ultimately, the best procedure.

He had had considerable experience with the Haynes operation, but did not think it offered as much hope of success as the sub-temporal drainage proposed by Dr. Crockett. He did not agree with Dr. Crockett concerning the advisability of exposing only a small area of dura. He preferred, personally, to expose a dural area of two or three inches. Latterly, he had not employed any drain, but had trusted to the escape of the cerebro-spinal fluid into the soft tissues and its absorption there.

Concerning the occurrence of a hernia cerebri, attention was called to the fact that if the dura was perforated by simply scraping through the dura with a scalpel the pia would not be injured. A director could then be passed through the opening thus formed and the dura divided without injuring either the pia or the brain substance. If the pia was not divided, there was comparatively little danger of a hernia cerebri. In some cases the pial vessels were greatly engorged, and when this condition was present the application of a gauze compress moistened in a 1-1000 solution of adrenalin chlorid would contract the vessels, render the tissues firmer, and render their liability to injury much less possible upon manipulation.

Dr. J. A. Stucky, Lexington, Ky., had employed the method of Dr. Crockett in three cases of serous meningitis. A few years ago he was criticised severely for claiming that there was such a thing as a localized serous meningitis. His son had since operated by this method on a case with double mastoiditis. There were ten or fifteen spinal punctures in this case. He agreed with Dr. Crockett that enough fluid should be withdrawn to relieve the pressure. The operation was a step in the right direction, and was justified. Drainage with rubber tissue or rubber tubing, as advocated by Ballance, was better than with gauze.

Dr. Joseph C. Beck, Chicago, Ill., said the term, "spontaneously cured," was not properly applied to these cases because they had had the decompression operation and spinal puncture. The night before leaving home he had performed an operation such as Dr. Crockett described. The patient was practically moribund before operation. The drum was perforated in one ear, and from this came a discharge. He did a mastoid operation on the affected side, and found, leading up to the tegmen, an area of inflammation. He followed Cushing's method, making two linear incisions and a very imperfect cross incision into the dura. Through one of the larger incisions he passed a fine drainage tube, leaving the skin incisions wide open. He then made a spinal puncture.

He had no time to make an examination of the fluid up to this moment, but the next day as soon as he made another spinal puncture the child rallied. The temperature fell to 100, and he was on the way to recovery, which he hoped would be complete. He had had one case in which the patient recovered after the Haynes operation. He had used the fascia lata in covering a large area of dura, with success.

Dr. S. MacCuen Smith, Philadelphia, Pa., had not seen a case of purulent meningitis recovery after operation by any method, no matter what the procedure. The Haynes operation, although giving hope of relief, at first, had proved totally unsuccessful and had been practically abandoned. He would have renewed courage in treating some of these cases by the method proposed by Dr. Crockett.

Dr. Norval H. Pierce, Chicago, Ill., had not changed his position in this matter. He had yet to see a case of any severity, in which the bacteria were recovered from the cerebro-spinal fluid and cultured, get well. In this connection, he cited a recent case, in which the patient had otitis media which continued for six weeks, without external symptoms. The ear continued to discharge, and the general condition of the patient became less favorable. He operated, finding very little change in the mastoid. There was some degeneration in the terminal cells, and some change going on toward the labyrinth. All went well for three weeks, then there was vomiting, vertigo, sub-febrile temperature, rising to 102 in the afternoon, headache, slightly stiff neck, and doubtful Kernig. The question of operation came up immediately. Spinal puncture was made, yielding a turbid fluid, under considerable pressure. There was micro-organisms in a smear, but culturally the fluid remained sterile. The symptoms became very much improved after this lumbar puncture, and remained so for a few days, when the temperature and headache returned, and the vertigo became worse. The lumbar puncture report was thirty cubic centimeters removed; pressure, 138. Improvement again followed. After seven lumbar punctures, extending over ten days, the symptoms disappeared and the patient recovered. He could cite similar cases without labyrinthine symptoms, with all the classical symptoms of cerebro-spinal meningitis, treated in the same way, by repeated lumbar puncture, with recovery. It was a serious question whether the dura would be incised around this infected area.

Dr. Day, continuing the discussion, said it did not follow that there was inflammation in the arachnoid spaces, as he had found in three cases. If the Haynes operation would not cure these cases, why would lumbar puncture do so?

Dr. McCullagh, in closing the discussion, said, regarding the non-viability of the organisms in recovered cases, that Dr. Dwyer claimed that growth failed in many of these cases because of too-acid media. Recovered cases, it seemed to the speaker, suggested the possibility of self-limitation in diffuse purulent meningitis, just as in the epidemic type where there was always a percentage of cases which recovered spontaneously. In view of Dr. Day's observations, it was a question whether operative measures did more than add to the drainage.

Auditory Re-Education. Dr. Thomas J. Harris, New York City.
(Published in the September, 1916, issue of The Laryngoscope.*)*

Dr. Frank E. Miller, New York City, in opening the discussion, said: "This splendid paper of Dr. Harris brings out in many instances points which I have tried to establish in my attempt to standardize voice and sound-matters. I deem it a great honor to have the privilege of opening the discussion of so valuable a paper.

"It is my purpose to bring out a few points for further discussion which I hope will be interesting for further study.

'According to Dr. Irving W. Voorhees, both Dr. Alexander and Dr. Neumann, of Vienna, make the statement that pathological findings substantiate only seven per cent of so-called oto-sclerosis cases.

"My processes and methods of dactylization consist in breaking up adhésions in the region of the apex and base of the Eustachian orifice, about the palato-pharyngeus and pharyngeal muscles, and in separating the levator palati from the tensorpalati; also massaging the ascending pharyngeal artery and supra-tonsillar region, thus giving at certain points in the dome of the pharynx indirect stimulation to cochlea, vestibule, otic and Meckel's ganglia. Often, through the aid of this manipulation, I have been able to increase seven to twelve seconds' duration of bone conduction to twelve to fifteen seconds, and aerial conduction of twelve to fifteen seconds to thirty-two to forty-two seconds.

"Again, in many cases the suppuration dries up and disappears in fourteen days after dactylization.

"Now let us turn our attention to the subject of mechanical methods of treatment, contrasting principally the Maurice and the Meyer-Roman machines.

"First let us point out that in 98 carefully reported cases with Maurice's first and best imported machine the results were far inferior to those attained by the Meyer-Roman instrument.

"The Maurice machine is only capable of producing a series of vibratory changes which in themselves are not sufficient to effect a cure in every case.

"Realizing this deficiency, I have tried to set down a few of the salient points essential for an efficient machine; also what we are capable of producing with the Meyer-Rowan apparatus.

"We must have a machine that will, *First,* By mechanical vibration increase the blood supply of the part, which in turn, of course, increases its nourishment and allows for excretion. *Second,* Produce a natural form of sound vibration which may be varied to attune the tympanum without irritation. *Third,* By proper manipulation be able to break up any partial tendency to ankylosis. *Fourth,* Produce any amount of vibratory pitch, or resonance which is judged acceptable for raising the efficiency of the mechanical working parts of the hearing apparatus. *Fifth,* Produce any amount of vibration or stroke from 10 to 300 vibrations per second with or without mechanical pressure or suction. *Sixth,* Capable of use for syphoning the Eustachian tube in order to release lymphatic secretion, which is one of the principal causes of middle ear deafness. *Seventh,* By an experienced manipulation and proper knowledge of otology all these factors can be blended or used alone to produce effects on the different component structures. *Eighth*, Have proper types and sizes of catheters that will pass into the Eustachian orifice without trauma. *Ninth*, Produce suction or massage separately or with sound vibrations from either of four machines or their combinations at the pleasure of the operator. *Tenth*, Provide any amount of force as the case may require.

"These ten factors I have found incorporated in the Meyer-Rowan machine, and by proper scientific manipulation and knowledge of the anatomical and physical structure of the ear, have obtained some very striking results.

"It has been questioned as to whether the cellular tissues function or degenerate under treatment. This machine produces solely a stimulation of the parts which naturally, if applied properly, will tend to activate the cells and increase their tone and functionating power.

"The subject of auditory re-education comes to my attention. I believe its ineffectiveness and apparent failure by many is due not to its impracticability, but to the lack of sufficient study into the normal operation of the ear as well as the etiology of the pathological condition.

"Inasmuch as the laws of hearing are not known nor, as yet, been reproduced by any mechanical device, we must of necessity establish further new views and theories with which to try to accomplish this long desired end.

"The phonograph being a disc cannot transmit and translate sound of the correct intensity and pitch as produced by the voice.

"Some years ago I brought and submitted 23 personal cases to you for discussion, representing some of the principles to which I am still holding, in some measure.

"The external meatus can be inspected with the otoscope and the condition of the drum inspected, but its recording sensitiveness cannot be determined by inspection.

"To understand the physical properties of the drum, I might mention its possibilities in manner of response to various sound vibrations.

"The drum is a cuspoid, formed by the action of the two planes of forces, one sinister—the other dexter-gyrate, acting in opposition. The dexter-gyrate force decreases while the sinister force increases, until at the vertex the two forces are in equilibrium.

"Similarly, we have the laws governing the earth and the sun. The equilibrium position of the two forces result only after they have made two and a half turns; that is to say, it takes two and a half turns to establish equilibrium. The equilibrium point or vertex of the contact of the two curves makes the cuspoid. Thus the cuspoid is of such form that any sound reaching it conforms exactly to that part of the cusp upon which it is registered.

(To be continued.)

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

NATURE AND CONTROL OF HEMORRHAGE IN NASOPHARYNGEAL OPERATIONS.*

DR. JOSEPH WEINSTEIN, New York City.

The operative technique in nasopharyngeal work has recently seen such gradual and progressive improvement that the procedures involved have at the present time reached a high degree of efficiency. Indeed, numerous methods offer themselves to the specialist in this field of surgery, and it is the ability to choose and execute the one procedure specially adapted to the exigencies of the case on hand that marks the man with extensive and varied experience in nasopharyngeal work, that is, the specialist, from the occasional operator on the nose and throat.

Such rapid progress in operative technique has had, however, one undesirable feature. It has somewhat blunted the recognition of the fact that nasopharyngeal operations are in many ways similar to the major operations of surgery, involving comparable risks from shock, anesthesia, infection, etc.

Moreover, the one striking thing about a major operation is its comparative bloodlessness, and the great care taken to effect such bloodlessness to the highest degree possible. In nasopharyngeal work, on the other hand, much remains to be done in this phase of the operation to obtain any results that are comparable to those attained in general surgery. Yet, careful comparison of a laparotomy with a tonsillectomy, let us say, shows that the dangers of uncontrolled hemorrhage or oozing is rather more marked in the latter than in the former. Of course, bleeding from a large vessel is equally dangerous whether the blood enters the peritoneal cavity or gushes from the mouth, and its treatment, that is, ligation of the large vessels is equally imperative and is about the same in procedure in either case.

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*Read at the Twenty-first Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, Memphis, Tenn.

On the other hand, smaller hemorrhages in our work are of greater significance because the blood is apt to enter the bronchi and the lungs with much more serious consequences than if the free peritoneum were involved. Moreover, such blood is more apt to be and indeed almost always is mixed with infected tissues or secretions, for, of course, no nasopharyngeal field can be made as sterile as a clean peritoneal or other field of surgical interference. To the dangers of mechanical damage due to interference with respiration and with the circulation in the lungs, is added the probability of infection with all its dire consequences from a slight bronchitis to a bronchopneumonia or a lung abscess. In this connection the great difficulty of immobilizing the site of bleeding in nasopharyngeal work, the site of operation being usually involved in the movements of respiration, swallowing, vomiting, etc., must be remembered and compared with the more or less greater ease with which other fields may be immobilized from the complete rest of an extremity to the fairly complete paralysis of the intestine attainable by the use of drugs.

Still there is no denying the fact that nasopharyngeal operations are done by the hundreds in which these considerations are hardly entered into, and it is probable that it is merely the lack of such records as are usually available in the major surgical field that hide the fact of the extensive amount of damage that results. There seems to be no reason why progress in this important detail of operation should not go on at a speedier rate than heretofore has been the case. Careful study of the literature and extensive experience in special nasopharyngeal work have convinced the writer that there has been rather a lack of application of the various methods involved rather than absence of remedies dealing with the evil.

The procedures involved in dealing with nasopharyngeal hemorrhage are preventive, surgical and medical. The preventive methods in the first place depend upon such study of the general condition of the patient as may reveal any constitutional conditions favoring a hemorrhage from the much feared hemophilia to diseased kidneys with consequent high blood pressure. Such study we may safely leave to the internist or to the family practitioner who is usually the intermediary between the patient and the specialist surgeon. I would like to warn the latter, however, from taking any unnecessary risks in the matter with patients who reach him directly or in whom the general examination has not been thoroughly performed. The time spent in having such examination done while apparently thrown away in case after case, may save him from the great misfortune of witnessing a serious or fatal outcome after operation upon a patient who should either never have come to operation or have been properly prepared for the procedure.

Further prevention is inherent in such mastery of technique as shall result in the choice of the method best adapted to the individual case. In this connection, the recent anatomical studies of Balatnikow[1] are interesting. He says: "The topographical relations between the large vessels and the lateral pharyngeal wall are dependent, in a great measure, upon the development of the bony parts of the skull in that region, and that on account of the poor development of the visceral portion of the skull, the blood vessels lie closer to the tonsils in adults than in children."

The position of the head had an influence on the topography of the vessels and their relation to the tonsils; the blood vessels are closer to the lateral pharyngeal wall on that side from which the head is turned away and further away on the opposite side.

The distance between the tonsils and the internal carotid is about one-half to one centimeter, and between the tonsil and the external carotid artery is about two centimeters. This distance, however, is variable. Opening the mouth and depressing the tongue was found to have no influence on the position of the blood vessels in the dead body, but in the living it is possible, by such manoeuvers, to bring about a change in the position of the vessels, particularly if there is an infiltration of the peritonsillar tissue. The pharyngeal wall is in intimate relation with the internal and external carotid arteries, the facial, the lingual, and the ascending palatine artery, and sometimes with the ascending pharyngeal artery and also with the submucous peripharyngeal plexus of veins. The "bouquet of Riolan," a cluster of ligaments and muscles attached to the styloid process, cannot always be relied upon as a protection to the blood vessels, as their relation is dependent upon the height of the cut.

Speaking about hemorrhages, Balatnikow says: "Hemorrhage following operation on a peripharyngeal abscess may come either because the arteries are wounded or because the veins are distended or varicose. As the arterial branches reach the tonsil capsule only, breaking up into capillaries on entering the tissues of the tonsil, tonsillotomy should not be followed by more than capillary or venous bleeding. If the tonsil, however, is completely removed within its capsule, severe arterial bleeding is possible. Because of the possibility of an abnormal position of the blood vessels, they should be carefully located by palpation before operating."

The following rules for operation are laid down by Balatnikow:

"In tonsillotomy, only that portion of the tonsil which projects into the throat should be removed. The tonsils should never be pulled out of their niche and the instrument should never be pressed hard against the lateral wall of the pharynx.

"In pharyngeal abscess, all precautions should be taken to check possible bleeding—instruments to sew the pillars or even to ligate the common carotid artery being held ready.

"The patient's head should be firmly fixed, the medium position being suggested as the one most desirable both from the standpoint of danger and facility in operating.

"The knife should only be used in making the incision through the mucous membrane, all deep exploration being done with a dull instrument. The wound should not be carried more than a centimeter and a half deep if a sharp pointed instrument is used.

"The surface of the cut should be parallel with the long axis of the mouth and the knife must never be directed backward and outward. The site of the incision be determined according to Thompson, i. e., the wound should be made in the apex of the external inferior quadrant, which is determined by drawing a line horizontally through the base of the uvula to meet a line drawn vertically through the anterior edge of the anterior faucial pillar."

The following hemostatic measures should be employed in the order given in cases of post-operative hemorrhage following operation upon the tonsils and lateral wall of the pharynx.

(1) Application of Mikulicz's compression forceps;
(2) Sewing together of the palatal arches;
(3) Compression of the common carotid artery;
(4) Ligation of the common carotid artery or its branches.

J. Leslie Davis'[2] investigations concerning the blood supply of the tonsils are also of interest. He says: "There are certain fixed sources of all hemorrhages from tonsillectomy operations and the majority of the text books are in error as to the blood supply of the tonsils." The entire supply comes from one artery which is formed "by an anastomosis of the ascending palatine branch of the facial and the descending branch of the internal maxillary. The artery thus formed, enters the fossa at its superior extremity, passes downward through the capsule for a distance of about one-half an inch before penetrating the capsule to reach the tonsil parenchyma." The tonsillar branch of the facial artery, the branch from the dorsalis lingua, and the branch from the ascending pharyngeal, supply only the surrounding structures in 95 per cent of cases at least. Davis, therefore, after enucleation of the tonsil places a suture ligature (using No. 1 catgut) around this artery in the upper part of the tonsillar fossa and ties it off. This is his routine practice in all adult cases, but with children, only when the bleeding is profuse and continuous.

While some of the conclusions drawn by the above investigators may be open to criticism, it is the purpose of this paper to call your attention to the amount and character of the work that has been done rather than to its merits or demerits.

Based upon the commonly accepted causes of hemorrhage, viz., high blood pressure, persistent vaso-dilatation and delayed blood clotting, therapeutic measures employed in the control of hemorrhage are of three kinds:

(1) Those equalizing the circulation and lessening the intravascular pressure at the bleeding point;

(2) Those contracting the vessel itself;

(3) Those decreasing the coagulation time of the blood.

Recent investigations of the phenomena of clotting of the blood have shown that normal blood in itself contains substances which, under certain conditions, unite to bring about coagulation.

According to Morawitz, a substance which he calls thrombokinase is present in all body tissues and especially in blood platelets. Prothrombin, antithrombin, calcium salts and fibrinogen are constantly present in normal blood. When the tissues or formed elements of the blood are injured, thrombokinase combines with the calcium salts and prothrombin to produce a new substance called thrombin which, with the fibrinogen forms fibrin or clot.

According to the investigations of Bordet and LeLange, thrombin is formed by the reaction between cytozyme and serozyme in the presence of a calcium salt. The cytozyme is found in platelets, leucocytes, and tissue juices (probably the thrombokinase of Morawitz and Howell) and the serozyme in the blood serum. These investigators attribute the formation of fibrin to the action of thrombin on fibrinogen.

Howell assumes that while the elements of coagulation are all present in the blood, there is normally sufficient antithrombin to prevent clot formation. The balance between the two is very delicate; cellular injury releases a substance, which he calls thromboplastin, that neutralizes or binds the antithrombin and permits the other elements of the blood to combine in the formation of the clot. Howell's views seem to explain the known phenomena of coagulation more completely than the earlier theories.

While we cannot enter into a detailed review of these studies, the theories of the formation of antithrombin must be mentioned as being of great interest and importance in the intelligent understanding of the factors underlying operative hemorrhage.

Most investigators agree that antithrombin is formed in the liver. Experiments on the origin of antithrombin have been carried on with few exceptions with Witte peptone which, when injected intravenously into dogs produces an anticlotting substance in the blood. That the liver is at least a factor in the production of antithrombin has been shown by the discovery that in dogs in which the liver has been eliminated from the general circulation injections of peptone do not have an anti-clotting effect on the blood.

Denny and Minot[3] conducted a series of experiments to determine the antithrombin contents of the blood in different parts of the body and attempted to produce antithrombin. Their investigations included a study of the effect of liver destroying substances upon the antithrombin content of the blood and have led to the following conclusions:

Antithrombin is formed in the liver. Venous blood taken from the liver, spleen, kidneys and intestines shows no appreciable difference from the blood of the jugular vein in antithrombin content.

When stasis is produced in any of these organs the liver blood alone shows a definite increase in antithrombin.

Perfusion of the liver with defibrinated blood causes an increase in antithrombin in the perfusate. Perfusion of the head, spleen and hind leg shows no marked increase and generally a decrease in antithrombin content.

Attempts to stimulate the liver to production of antithrombin by means of bile, bile salts, secretin and electrical stimulation were negative. Injection of small amounts of thrombin into the portal circulation caused a slight rise in antithrombin.

Dogs with phosphorous poisoning and consequent liver destruction show a marked increase in antithrombin content of the blood as well as a diminution in fibrinogen.

An interesting paper by Katherine and Cecil Drinker[4] on the effect of rapid progressive hemorrhage on the coagulation time of blood was published in February, 1914. According to these investigators, such hemorrhage causes a decrease in coagulation time, a gradual steady fall being noticeable as hemorrhage proceeds. This change was accomplished by a decrease in antithrombin, its amount remaining constant when the coagulation time was unchanged. Prothrombin was shown to increase slightly at first and then to decrease slightly. Fibrinogen was found to decrease as hemorrhage progressed. Platelet counts did not vary with progressive hemorrhage.

Gray and Lunt[5] conclude that moderately severe hemorrhage (13 per cent of the circulating blood) decreases clotting time. The important coagulating factors may be localized in the abdomen because (1) exclusion of the abdominal circulation increases clotting time and (2) hemorrhage after exclusion no longer results in decrease of clotting time.

The adrenal glands probably favor by their secretion rapid clotting after hemorrhage, but after adrenalectomy hemorrhage still decreases the clotting time.

Exclusion of the intestines usually increases clotting time but after this exclusion, hemorrhage can still decrease the clotting time.

The important role which the liver has been proved to play in coagulation indicates that it provides, perhaps in coöperation with the intestines and the adrenal glands, the necessary elements to hasten clotting after extensive bleeding.

Vosburgh and Richards[10] in 1903 noticed that an increase in sugar content caused the blood to coagulate more rapidly and as they had obtained this result by painting adrenalin on the pancreas, concluded that this was due to the action of adrenalin on the pancreas. Wiggers, a few years later discredited this. Von den Velden[11] in 1911 asserted that adrenalin decreased the coagulation time in man about one-half but attributed it to vasoconstriction which caused a discharge of tissue juices into the blood.

Cannon and Gray[6] discredit the theories of both Vosburgh and Richards and of Von den Velden and conclude that:

Adrenalin injected in small doses intravenously (0.001 mg. per kilo) and in large doses subcutaneously, will shorten coagulation time to one-half or one-third the former duration. The prompt shortening of the process after small doses is changed after larger doses (about 0.03 mg. per kilo) to a lengthening and later a shortening, or to a lengthening alone.

The effect of adrenalin on the clotting time is not associated with any corresponding effect on arterial pressure.

If the blood is confined anterior to the diaphragm, or if the intestines and liver are removed, adrenalin in small doses does not cause rapid clotting.

The addition of small amounts of adrenalin to drawn blood does not hasten clotting. Increase of dextrose in the blood to 0.3 or 0.4 per cent does not cause the rapid clotting seen after adrenalin injection.

The explanation is suggested that adrenalin accelerates the clotting process by stimulating the liver and perhaps the intestines to greater activity in discharging some factor or factors in coagulation.

In the same year Cannon and Mendenhall,[7] using as a basis for their experiments the discovery that injected adrenalin shortened the coagulation time of blood, attempted to increase the secretion of the adrenals by stimulating the splanchnic nerves to produce similar effects with the following results:

Stimulation of the splanchnic nerves results immediately or after a brief delay in shortening the coagulation time of blood.

Such stimulation usually produced less marked effect as it is repeated. If the adrenal gland is removed on one side, splanchnic stimulation on that side does not shorten clotting time; whereas splanchnic stimulation on the other side is still effective. The faster clotting is therefore due to increased adrenal discharge.

Since stimulation of the nerves supplying the liver and intestines does not hasten clotting and since increase of adrenalin has no effect in the absence of the liver and intestines, the shortened clotting after splanchnic stimulation is accounted for by the action of adrenal discharge on the liver and perhaps the intestines.

In a study on the effects of pain and emotional excitement upon coagulation of the blood, these investigators conclude that:

Stimulation of afferent nerves (sciatic, crural) or major operations under light anesthesia markedly shorten the coagulation time of blood. Emotional excitement is the occasion for very rapid clotting which becomes slow when the splanchnic nerves are cut. Pain and strong emotions have been proved to evoke secretion of the adrenal glands; and adrenalin hastens clotting. Rapid coagulation may be reasonably considered, therefore, as another instance of adaptive reaction serviceable to the organism in the injury which may accompany pain or which may follow the struggle that fear or rage may occasion.

Before concluding this part of my paper, I wish to call your attention to some recent investigations on the effects of chloroform and ether on the coagulation of the blood. In July, 1915, Mendenhall published a report of his investigations on this subject from which he draws the following conclusions:

Coagulation time is little altered by chloral hydrate.

Coagulation time is affected by chloroform as by chloral hydrate. The effects of chloral hydrate and chloroform are probably the result of disturbance and consequent interaction between two or more organs which are important in the coagulation process; probably liver, intestines and adrenal glands.

The evidence is not sufficient to prove that a retarding agent is produced.

Coagulation processes are hastened by ether anesthesia. The effect of ether is exerted wholly through its action upon the adrenals.

In December, 1915, Minot[8] summarized his investigations as follows:

Antithrombin is rendered inactive by choloroform and ether, thus allowing free thrombin, if present in an oxalated plasma, to clot fibrinogen.

Prothrombin is not converted to thrombin by chloroform; chloroform can precipitate both fibrinogen and prothrombin from an oxalated plasma. Chloroform does not weaken the action of a solution of pure thrombin. Ether does slightly.

Antithrombin could not be recovered from chloroform or ether extracts of serum or plasma, unheated or heated to 60 degrees C., and is not exactly identical to antitrypsin or to Doyan's antithrombin.

In one chloroform poisoned rabbit, the antithrombin of the blood was decreased below normal.

With the conclusions of these and other investigators in the field of physiology in mind, other scientists in the fields of bio-chemistry and pharmacology, have been at work with the idea to strengthen and hasten by therapeutic means the natural processes of coagulation. I shall mention a few of the better known products which have been the result of their efforts.

Immediately after Oliver and Schaefer, and Czybulski and Szymonivicz discovered in 1895 that there was a very marked rise in blood pressure after intravenous injections of extracts of the suprarenal glands, Moore demonstrated "that the active substance was only present in the medullary portion of the gland and that it was identical with a chromogenic substance, described by Vulpian as early as 1856, possessing striking color reactions—green coloration with iron chloride on the addition of alkalies or with iodin or chlorin water a pink-carmine color. The reaction suggested brenzcatechin and Von Furth succeeded in preparing from this chromogen a substance which in its behavior agreed with brenzcatechin. Takamine first prepared the crystallized active substance in 1901 and named it adrenaline." (Meyer and Gottlieb.) To discuss further so widely and well known a substance as adrenalin would be superfluous.

In 1867, Pelletier separated from ipecacuanha its emetic principle which he named emetine. In 1894, Paul and Cownley isolated its two crystalline alkaloids emetine and cephaeline. The uses to which this drug has been put are also well known. My personal experience with emetine in nasopharyngeal hemorrhage has been extremely gratifying and while I am unable to say in what manner it acts, I have come to look upon the injection of one-half grain of emetine before operation as a routine procedure in my operative work. I made a close study of my results when I first began to use emetine using the Duke's coagulometer in making my tests. My results after several months' experience warrant me in claiming that by a hypodermatic injection of one-half grain of emetine fifteen minutes before making my tests, I am able to reduce the bleeding time by one-third at least.

Pituitrin is described as an extract made from the infundibular portion of the hypophysis. In 1913, Citelli published a report of his gratifying experiences with pituitrin in the control of nasopharyngeal hemorrhage and since then there have been other reports of a similar character. I tried out pituitrin in the same manner as I did emetine and obtained practically the same result, i. e., the bleeding time was reduced about one-third. I did not, however, get as uniform results as I did with emetine.

Coagulen Ciba was discovered by Professor Kocher of Berne University and his assistant, Dr. Anton Fonio, and is described by them as an extract of blood platelets containing cytozym which when added to animal blood combines with serozym existing in the blood and forms thrombin or fibrin ferment. Being wholly within the bounds of a physiological process, coagulation with this preparation is claimed to be harmless and non-irritating.

Fonio has published his personal experience in the treatment of 700 cases and says that in no case was any septic effect observed. Kausch, after treating 300 cases with coagulen ciba confirmed Dr. Fonio's experience, as also did Dr. Obermueller after an extensive use of it in rhinological practice. My own experience with this product has not been as extensive as with the two former preparations but in every case in which I have used it, it has shortened the bleeding time, in a number of instances having had an almost instantaneous effect.

Thromboplastin (tissue juice) is prepared from the liver and brain of cattle. Dr. Hess[9] published his preliminary report of his experiences with this tissue juice in April, 1915, and since that time, other reports have been made of its successful use in the control of hemorrhage.

Dr. John T. Cronin of the New York Department of Health, reports on its use as follows:

"The use of thromboplastin has been extended to all Department of Health Nose and Throat Clinics. In a summary of 2,036 tonsil and adenoid operations the results were all excellent, in a large majority of the cases there was no bleeding at all and in the remaining cases only slight bleeding. There were no bad after effects. In no case has the operator or nurse been obliged to return to the clinic to care for a bleeder since the use of thromboplastin has been made a routine procedure."

In the comparatively few cases in which I have used thromboplastin, I have had uniformly good results.

Coagulose, a product obtained by precipitating normal blood and said to contain the fibrin ferment necessary for clotting blood is reported to have given good results in nasopharyngeal hemorrhage. Frey in 1898, treated hemorrhage with normal horse serum. Weil reports a case in which he shortened the coagulation time from four and one-half hours to forty minutes by means of this treatment.

Still other products have been offered from time to time for the control of hemorrhage but have not become so well known and their effect has not been, consequently, so closely studied.

I have attempted to show that recent investigations by anatomists, physiologists and pharmacologists have a direct bearing upon the daily problems of our work and it is no less than imperative that the results obtained by these workers should find prompt application and control in actual operative technique. Such course of action must require a somewhat different attitude to nasopharyngeal surgery from that usually encountered. As I have shown, even the single element of hemorrhage presents as perplexing problems as any that may arise in the usual procedures of major surgery, and it demands the same attitude from us, workers in this special field, as the pioneer surgeons and the present leaders of surgical science have shown in their work.

Such attitude and with it success in the development of this important branch of medical endeavor must rest upon the following factors:

Careful study of the local anatomical situation and the discovery of facts leading to the improvement of general technique and especially improvements in the prevention and treatment of hemorrhage;

General examination of the patient with the purpose of discovering any constitutional or morbid factors leading to the decrease in the clotting index of the blood;

The choice of proper anesthetic and its proper administration.

The study of new substances developed in the laboratory and applicable in the diminution of the tendency to bleeding and in checking such hemorrhage once it has set in,

And, finally, such coöperation between the different workers in these varied fields as shall most certainly and quickly lead to our goal, that is, the proper and efficient correction of morbid conditions of the throat and nose, attained with least discomfort and danger to the patient.

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3. DENNY AND MINOT: *Amer. Jour. Physiology*, Aug., 1915, p. 233.
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LEFT-HANDEDNESS AS AN ETIOLOGICAL FACTOR IN SPEECH DEFECTS.

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Left-handedness has for centuries been one of the peculiar characteristics of humankind that have led men to make conjectures as to its "why and wherefore." A similar cause for wonder pushed its way into our thinking when it was discovered that ever and anon Nature placed a man's heart on the right side of his body. Men have sought to find a relation between these variations; they have attempted to correlate epilepsy and left-handedness; left-handedness and mental ability, and the idea, that the skilled movements of the hand are not entirely unrelated to the working of that complex mechanism of articulate speech, is not entirely new. But it may seem a wholly new, a rather fanciful hypothesis that the training of a left-handed person's right hand should evolve in him a defect of speech. Yet a consideration, first, of the anatomical background of the speech mechanism, and then of the neural representation of the fine adjustments of the right fore-arm will, we think, show a relatedness of kind and intimacy of association which makes easy of acceptance the fact we have observed, that a forced disturbance in one of these functions is apt to make itself evident in the other.

The founder of the doctrine of phrenology is Gall. His attempt to materialize and localize psychic processes was declared by the Paris Academy of Sciences to be erroneous. Gall's deductions that the convolutions of the hemispheres of the great brain ought to be recognized as the parts where the instincts, feelings, thoughts, talents, the affective qualities and the moral and intellectual forces are exercised, were quite sound; but, unfortunately, his imagination led him into speculation of hypotheses unsupported by facts. After great controversies his theories were soon forgotten.

In 1825, for the first time in the history of medicine, Bouillaud attempted to determine a localization within the brain for the center of speech. His "*principle legislateur de la parole*" (the localization of speech), was however not acknowledged by his contemporaries although he based his theories on cases in which speech had been affected during life and in which after death the frontal lobes were found to be injured. In 1836, Marc Dax, a French physician, reported before a meeting of physicians at Montpelier, the results of his investigations in eighteen hundred cases of hemiplegia of the right half of the body with accompanying disturbances of speech.

This observation led to the establishment of a most important fact in connection with speech, namely, that right-handed people use the left hemisphere of the brain in speech.

In 1861, Broca revolutionized our conceptions of the function of speech by localizing it within the third and second convolution of the frontal lobe. Ever since that time this region has been called "Broca's speech center." Broca, in 1862, explained the localization of the speech center in the left hemisphere by the preponderance of right-handedness in the human race. His theory was, however, apparently contradicted by the discovery that speech disturbances occurred also in cases of left-sided hemiplegia. Upon closer examination the interesting fact was revealed that these cases of left-sided hemiplegia with speech disturbances were left-handed people. Post-mortem examination of such cases as published, for instance, by Pyr Smith, Hughlings Jackson, and John Ogle, showed that the lesion was within the third and second convolution of the right frontal lobe. Broca brought these newly discovered facts into accord with his theory by explaining that in the left-handed person the speech center is located in the right hemisphere. The preponderance of right-handedness in the human race was evidently in accordance with the presumption of the localization of the speech center within the left hemisphere. But direct evidence was not at hand until 1870, when Fritsch and Hitzig began their experiments of stimulating the cerebral cortex with an electrical current and showed conclusively that stimulation of one cerebrum produced coördinated movements in the opposite side of the body.

In 1874, Wernicke published his work which distinguished a sensory speech center in the temporal lobe of the left hemisphere at the same time accepting Broca's center as the correct location of the motor speech functions. In the recent work of P. Marie[2] the position is taken that in all speech disorders the actual injuries always extend beyond the limits of Broca's speech center, and that the assignment of special speech functions to this area is entirely unjustified. We have the further confusing evidence of a case reported by Lewandowsky,[3] of a thoroughly right-handed person who, at autopsy, was found to have a tumor in the right centrum ovale, and still presented an aphasia and a right-sided apraxia. Professor Ernest Jones, who refers to the case, remarks: "From this careful description it would seem that in the future the possibility must be accepted of the speech and purposeful movements being localized in the right hemisphere even although the person is right-handed."

While the problem of the localization of cerebral function is still comparatively young and as yet unsettled, much progress has been made. The situation is well stated by a recent author:[4] "There seems, therefore, on the whole, to be good ground for retaining Broca's speech center, while relieving it of part of its supposed duties. It is probable that the rearmost part of the third frontal gyre (Wernicke's area), in the left hemisphere, is intimately connected with the adjoining part of the precentral gyre, from which issues the motor pathway to the muscles of speech. Also, there is good evidence that the Broca region is the most vulnerable part of the cortex, as regards the motor coördination of speech. A writing center in the second frontal gyre, in close proximity to the motor area for the hand, has been asserted as the teaching of a few strikingly positive cases; but the negative and mixed cases have sufficient weight to prevent a general acceptance of this localization. Indeed, the entire cerebrum would seem to be, of necessity, involved in man's linguistic attainments and uses."

The localization of the speech centers, then, seems to be well established; their situation in the cerebral hemisphere corresponding to the most developed side of the body seems to be the rare exception; and the proximity of the speech center to the area of motor control of the arm, together with the cases where disorders have appeared in these functions simultaneously, lends itself, on the anatomical side, to the hypothesis that there is an intimate connection between the localized areas for speech and the highly refined motor coördinations of the right arm.

As regards the fact that the left hemisphere is the seat of direction for the majority of these skilled movements, there is little information of an *etiological* character. We may distinguish between the general lines of evidence as they attempt to explain the phenomenon from an evolutionary or functional point of view or as they seek for some more direct explanation in the anatomical structure of the human being. The phenomenon in itself is an interesting one. As E. T. Brewster[5] has expressed it: "Dexterity then, on either side of the body, is a universal and peculiar human quality, as characteristic of our species as laughter, speech, reason, the ability to use tools or to walk on the hind-legs. In fact, considering that parrots and jackdaws talk, that bears and apes walk erect, while if horses do not laugh, dogs do sometimes smile, and that it is about equally difficult to prove that some animals do not reason as that some men do, one might even go so far as to say that this universal and peculiar uneven-handedness is the only certain test of humanity." And while it is quite remarkable that one cerebral hemisphere should have been called upon to preside over the movements of speech and over those of the skillful right hand we may be assured that this arrangement did not happen by chance and we may inquire what advantage tempted evolution to produce such an arrangement.

On the one hand we have such explanations as the following: "Seeing that there is no apparent anatomical reason why man, even primitive man, has chosen the right hand as the instrument of the mind, we may ask if it is an acquired useful habit to which anatomical conditions may have contributed as a coefficient. Primitive man depended largely upon gesture language, and the placing of the hand over the heart is universally understood to signify love and fidelity. Primitive man also protected himself from the weapons of his enemies by holding the shield in the left hand, thus covering the heart and leaving the right hand free to wield the spear. In the long procession of ages evolution has determined the right-hand specialization as being more advantageous to the progress of mankind than ambidexterity. Right-handedness is an inherited characteristic in the same sense as the power of speech."[6]

Similarly Kussmaul assumes, that although there are innervation centers for all manual acts in both hemispheres, those in the left hemisphere are more developed because right-handed persons have always used these centers.

So Gaupp considers right-handedness a specific characteristic of the human race; he believes that the asymmetry of the human body shows itself not only in right-handedness, but also in other parts of the body. He points out that this asymmetry is not a disadvantage; but is, on the contrary, in most intimate connection with the advantages we enjoy. He says, "perhaps symmetry was the sacrifice Nature had to make to bestow upon the human race, other, richer assets."

M. Meyer makes a similar observation. He explains the apparent physiological discrepancy of right-handedness by the evolution of the human race. Animals are ambidextrous in contradistinction to mankind, and human culture has brought about this one-handedness.

As opposed to these theories, there have been several explanations set forth based on peculiarity of anatomical structure. According to Broca[7] the left hemisphere of the brain is usually developed earlier than the right and thus the right extremities are involuntarily preferred for muscular activities.

William Ogle lays stress upon the following organic features in explaining the prevalence of right-handedness: From an examination of a number of brains he points out greater weight and greater specific gravity for the left hemisphere; that the left hemisphere is richer in convolutions and is sooner developed in the foetus than the right one, and finally it is more richly supplied with blood, the "carotis communis" of the left side being usually larger than the right one. But Dr. Cunningham[8] shows good experimental evidence to disprove greater blood supply to the left cerebral hemisphere and states that Braune in an examination of ninety-two brains found that in fifty-two the right hemisphere was heavier; and having cited evidence unfavorable to the theory of greater richness and complexity of convolutions in the left cerebral hemisphere, and against an earlier development of it he turns to a restatement of the theory set forth by Buchanan[9] in 1862. The explanation is based upon the mechanical advantage of the right side. Owing to the superiority of the right lung as a more stable support for the right upper limb, together with the fact that the content of the abdominal cavity is heavier by about fifteen ounces, on the right side, thus displacing the center of gravity to the right of the mesial plane, there is, he says, a considerable mechanical advantage for the right limbs more than for the left.

The latest and perhaps the most interesting explanation of left-handedness based on a structural peculiarity is that set forth by Stevens and Ducasse.[10] The conclusions arrived at are substantiated by considerable data of an experimental nature obtained from a study of peripheral vision. They are as follows: "By reason of the fact of a marked difference in the space sense of the two halves of the retina, those objects in the right half of the field of vision, by appearing larger, attract the visual attention which in turn leads to grasping movements of the right hand. The hand thus favored by earliest experience acquires a special skill which causes it to be used in all manual acts requiring the greatest precision. This overestimation occurs in the left half of the retina in both eyes and is due to some anatomical peculiarity which this half of the retina acquires by virtue of its connection with the left hemisphere of the brain." We see no *a priori* reason why this peculiarity of the retina should not be treated as an explanation of the greater development of the left hemisphere just as the greater use of the right hand has been used to explain it. We would like to suggest, however, that the theory would become more conclusive if it were found that this peculiarity were reversed in left-handed persons.

So much for the etiology of left-handedness. It has been thought to be a habit, a result of training, and when one reflects on the fact that the child is usually ambidextral until the thirteenth month,[11] the theory carries some plausibility. Prof. Meyer[12] thinks, and apparently not without good reason, that the infant is usually left-handed. However, this last question may be settled the evidence is too great against the proposition that the child becomes right-handed as a result of education. For on the other hand it has been shown that left-handedness and consequently right-handedness is an inherited character and on the other that right-handedness appears among savages where civilization and custom have not been dictators, where Nature has been the only instructor. This preponderance of right-handedness is not new, it seems to have been the condition quite as far back as the history of man takes us. On this last point after reviewing the work of numerous eminent anthropologists we have searched this characteristic out of the dim past, from the engravings of prehistoric man, from the fashion of his weapons, and from the remnants of his skeleton, Dr. Cunningham remarks: "It is easy to prove that this characteristic is one of vast antiquity. Of this there is the clearest evidence not only in historical records and pictorial representations but also in ancient mythology and in the structure of all languages. So far back then as history takes us right-handedness would appear to have been a common birthright of mankind."

These two general lines of evidence we must insist upon as established, namely, that the unisidedness of man is more than a habit. and that there is some basis in the anatomical structure of the brain to account for, at least make possible, an intimate connection between the skilled movements of speech and those of the dextral hand. Whether we accept any of the theories of righthandedness that have been set forth or whether we leave this secret of man's unisided way among the mysteries yet before science to solve, we must recognize in the human preference for the right hand the same sort of structural basis as we have accepted for his capacity of speech. It may well be that in one case as in the other it takes education to bring this latent capacity to fruition but the evidence is quite as good for right-handedness as for speech that every normal child is born with the quality fixed in the complexity of his brain and nervous mechanism. Just how close the association is between these two complicated functions, it is evident that we do not know. We do know, however, that the seat of control of both is located in the same hemisphere; we know too that the area which controls the movements of the hand in writing is in close proximity to that which regulates the movements of speech. On the functional side we are aware of the fact that there are those among us who seem to express themselves more adequately with their hands than with their speech organs, and Miss A. Wyczoikowska[13] cites some experimental evidence to show a direct connection between the movements of the thumb and forefinger and those of the tongue. We shall proceed, then, on the assumption that when we attempt to show that forcing the left hand to give up its natural functions may produce a defect in the mechanism of speech, we are not dealing with some mystical relation outside the casual sequence.

That many left-handed children are sufferers from speech defects is well known, and it has usually been supposed that the defect was a necessary consequence or accompaniment of the variation. Statistics about speech defects of the left-handed were gathered by Bolk and Lueddekens;[14] the latter found an anomaly of speech in 24 per cent of the left-handed children of normal mental qualities; in those of mediocre, 35 per cent, and in those of lower mental qualities, 44 per cent. In fact, in almost one-half of the left-handed children he found anomalies of speech.

The fact that among our manifold cases of speech defect, left-handedness was met with quite frequently, induced us to undertake the problem of finding out whether or not left-handedness may be considered an etiological factor in speech defects. During the last few months we have carefully looked into the histories of the stutterers and stammerers of the neurological department of the Vanderbilt Clinic, in order to find out whether they were, or had been, left-handed.

To such patients of the clinic as could not be interviewed personally, double postcards were sent with the request that the following three questions be answered: (1) Are you left-handed? (2) If not, were you left-handed before you became right-handed? (3) Are or were any members of your family left-handed? If so, do or did they have any speech defect?

There were many interesting replies to our three questions, but space forbids mentioning more than two. One says, in answer to the first question: "While not wholly left-handed I have some of its peculiarities. In baseball, while I bat the ball from right to left, yet I hold the bat cross-handed, that is, to bat the ball from left to right. When toeing the mark for running I advance my left foot first. I always put my left shoe on first. My left eye is stronger than my right." Another says, in answer to the same question: "Yes, that is for some things, ambidextrous as a result of forced training." In answer to the second question the same patient replies: "No, but always left-handed in dealing cards." In reply to the third question this patient answers: "My maternal great-grandmother was left-handed."

Our investigation of 500 cases of speech defect shows that 25 per cent are or were either left-handed themselves, or some member of their family shows this interesting feature. Seventeen and one-half per cent remained left-handed or returned to the left-handedness notwithstanding the endeavor of both parents and teachers to make them right-handed. Eight per cent were left-handed before they became right-handed and of these 1.5 per cent are ambidextral. Left-handed heredity was met with in 24 per cent. Some more recent work has convinced us that these figures are conservative. The special speech defect in 92 per cent of the cases quoted is stuttering, while the other 8 per cent are lispers.

The prevalence of left-handedness among persons otherwise normal Dr. Ernst[15] found to be 3.7 per cent among boys and 4.8 per cent among girls. Of 2,000 subjects tested by Dr. Ogle,[16] 85 or 4.5 per cent were found to be left-handed; of the 85, twelve had a left-handed parent; and of 57 there were 27 who knew of a left-handed relative. He also found left-handedness to be twice as common among men as among women. Hyrtle[17] estimates the amount of left-handedness at 2 per cent; Brinton,[18] 2 to 4 per cent; Hasse and Dehner examined 5,141 individuals and found only 1 per cent of left-handedness.

We are not unaware of the criticism which may be suggested to discredit any inference drawn from the relatively high per cent of left-handedness found among persons suffering from speech defects. That is, it may be suggested, that left-handedness may be correlated in general with neurotic tendencies which in turn may be a favorable soil for the development of speech defects. Indeed, Vallin[19] has shown left-handedness to be more prevalent among epileptics than among normal subjects. Smedley[20] states that dull pupils are more nearly ambidextral than average, and average pupils more than bright pupils. H. E. Jordan[21] places the per cent of left-handedness for normal persons at 2 per cent; among lunatics, at 5 to 8 per cent; among criminals at 22 per cent; he also states that sinistry is more prevalent in the lower strata of society, that it is more often met with among savages than negroes, and more often among negroes than whites. Though all statistics do not agree with the tendency here shown to find a positive correlation between left-handedness and a rather lower mentality than normal, as for instance the work of Bolton, we rather agree with the first criticism suggested but are strongly inclined to think that the average mentality of the subjects with whom we are working is, except as might be accounted for directly by the handicap in speech, as high as that of the average school child.

But as a matter of fact the large percentage of left-handedness we have noted among persons having speech defects does not become strikingly significant until one considers the number of cases in which this sinistry has refused to succumb to the coercion of training. We have no statistics to offer as regards the prevalence of such cases, nor of ambidextrality or bidextrality among our subjects, as yet. We feel that a superficial investigation will not reveal the facts and in this case that the method of the questionaire is superficial for we have found that often our patients have been unconscious of the fact that they are wont to use both hands, that they are bidextral. As we have already stated, it is the exception that the left-handed person is not forced, either by custom or direct supervision, to use his right hand for movements that he would naturally make with his left hand. In many instances we have found direct evidence, both among those in whom the training of the right hand has been permanent and among those who have returned to the use of the left hand, that they were naturally left-handed. We are inclined to think that in many cases the training was begun so early as to obscure this natural tendency.

In order not to be obliged to depend upon such unreliable information, we are attempting to find out for ourselves whether the patient is left-handed or right-handed. Our experiments follow two general lines of inquiry. To ascertain the hand used in habitual movements we have followed the tests suggested by Ewald Steer:

To detect extreme left-handedness: Eating soup, removing the stopper from a bottle, turning a coffee grinder, writing.

To detect a moderate degree of left-handedness: (a) Involuntary or little observed movements of the hand, gesticulation in speaking; reaching out for objects; dealing cards.

(b) Voluntary, simple manual activities; throwing a stone or ball; shuffling cards; using a whip.

(c) Complicated, finer activities: threading a needle; peeling potatoes or apples; cutting bread.

To determine the natural efficiency of either hand we have used three tests, of common use in the psychological laboratory, but new to our subjects involving movements more or less unfamiliar. The tapping test is described in Whipple's manual, part I, page 130. A plate of brass four inches square is placed on the table before the subject. He is given a tapping stylus and is seated before the table in a writing position so that his forearm rests upon the table. The only instructions given were that the subject should think of nothing else and tap the brass plate as rapidly as possible from the signal "start" until the signal "stop." The stylus is connected by a flexible wire with an electrical counter, which is, in turn in circuit with dry batteries and the brass plate. The only other requisite for the test is a stop watch. The time given in each case was thirty seconds. Another test was made like the first in all respects except that for the brass plate was substituted a triangular board inclined 45° from the surface of the table. In each corner of the board is a hole .5 cm. in diameter, each hole being 8 cm. distant from the others. The subject was instructed to touch the bottom of the hole with the point of the stylus; the type of movement and direction of procedure was left to him. Three tests were made for each hand beginning with the right and thereafter alternating. In the following table the average for the three trials with each hand is given. The third test was the familiar measurement of the strength of grip by the dynamometer. We do not think that the absolute records here given are comparable with those where the Smedley instrument has been used for our dynamometer was of the simple oval type and non-adjustable. The index of dextrality, that is, the superiority of one hand over the other, is, however, directly comparable with other results. The subjects were picked at random from the clinic. There happened to be in the group one left-handed girl and three boys who considered themselves ambidextral. The small number of subjects, sixteen, tends to make the results inconclusive; we publish them as they tend to be expressive of the progress of the work so far as it has gone. Three tests were made with the dynamometer for each hand; only the best record is given. Of the sixteen subjects, fourteen were stutterers and two were lispers:

In the table I stands for index of dextrality, obtained dividing the record of the left hand by that of the right.

The results here hardly warrant any interpretation. Attention may, however, be called to the fact that nine of the sixteen subjects did better in the dynamometer test. The only subject who excelled with the left hand in the three hole tapping test was the avowed left-handed person. In the tapping test only two did better with the left hand, and both of these stated that they were right-handed in all respects. Why the tendency to left-handedness should appear in the measurement of the strength of grip and not noticeably in the tapping test is rather obscure. If the results of our further investigations should confirm the tendencies here indicated, we might infer that the greater success in the tapping tests with the right hand was due to training, while the records of the dynamometer more nearly express the natural undeveloped capacity. As regards the index of dextrality with the dynamometer, Whipple places it between 91 and 96 per cent; Smedley, from 82 at the age of nine, to .89 at the age of eighteen; Wallin, for epileptics at 1.5 per cent.

Subject:	Age:	Sex:	Tapping:			Three Hole Test:			Dynamometer			Hand Prefer.
			R.	L.	I.	R.	L.	I.	R.	L.	I.	
W.S.	17	M.	141	60	.43	43	39	.9	39	35	.9	R.
H.S.	16	M.	151	142	.94	53	45	.84	30	37	1.23	B.
R.G.	12	M.	171	177	1.03	43	38	.88	22	23	1.04	R.
J.N.	12	M.	165	137	.83	48	31	.65	19	12	.63	R.
Y.S.	13	F.	171	138	.8	39	36	.92	14	16	1.14	R.
S.H.	20	M.	127	112	.88	44	43	.98	36	33	.92	B.
M.W.	18	F.	162	157	.97	26	28	1.08	11	13	1.2	L.
S.B.	21	F.	144	147	1.02	46	35	.76	14	15	1.1	R.
M.R.	16	F.	132	109	.83	43	36	.84	16	19	1.2	R.
A.G.	14	F.	160	143	.19	42	35	.83	20	18	.9	R.
F.E.	16	F.	137	132	.96	42	32	.76	17	18	1.06	R.
A.W.	20	F.	140	123	.88	37	28	.76	20	25	1.2	R.
C.H.	18	M.	151	110	.73	43	35	.81	35	31	.9	R.
R.C.	15	M.	134	123	.92	45	40	.89	21	20	.95	R.
L.D.	15	M.	144	134	.93	36	31	.86	18	21	1.17	R.
					Av. .76			Av. .86			Av. 1.03	

The evidence that training the right hand of the left-handed child produces a speech defect must be more or less inconclusive for there will always be an abundance of negative cases. But the fact is before us that many times the speech defect appears simultaneously with the correction of the left hand at a time when the child's speech has become well established and there is some evidence to show that the defect disappears with the return to the use of the left hand. Dr. Whipple[22] calls attention to three cases where the casual relation seems well enough established. He says: "My attention has been called to a case of left-handedness in a boy about eight years old and in the third grade. His teacher tried to compel him to use his right hand in various school exercises, with the result, apparently, that a speech defect nearly equivalent to stammering, appeared." He cites another case of a little girl whose development seemed normal until about a year and a half old, when an attempt to convert her left-handedness resulted in her ceasing to talk. When given liberty to use her left hand again freely she began to talk. The third case concerns a young man of twenty, afflicted with word-blindness and stuttering, who was cured by reversing the "hand."

When we began our study of these cases we were unaware that anyone else had noticed a relation between these two conditions. Among the left-handed patients who had come to us for training we found a number whose speech defect appeared at about the same time that they were forced to change the dextral hand. This led us to inquire further and though oftentimes it has been very difficult to ascertain at just what time the speech anomaly made its appearance or just when the education of the right hand began, we have been able to find some twenty cases which seem to us clearly indicative of the interaction of these two motor coördinations. Four of these cases are represented in the tests. The evidence is not so clear as in the cases cited by Whipple, for while the speech difficulty seems to have occurred as a result of the forced training of the right hand, we have not found that where a return to the use of the left has occurred that the difficulty disappeared. The evidence we have gathered was obtained from the persons or from their parents. We quote the following, a voluntary retrospection of S. H. as he was doing the tests, as typical of the information we obtained: "When I was six or seven years old I began to stutter when talking to my teacher. She made me use my right hand and hit my left one every time she saw me use it. But every time she turned her back I used my left again and so now I write with my right hand and every little movement I make with my right, but I pitch ball with my left." We have as yet no clear evidence that a return to the use of the left hand will alleviate the difficulty of speech, but our study in this direction has not gone far enough to produce results.

In view of the multiplicity of situations which result in anomalies of speech and because it is so difficult to make a clear case for the etiological factor of left-handedness even with those patients where the evidence seems most convincing, we wish the following conclusions to be considered tentative. We hope, however, that the present data will recommend itself sufficiently to speech educators to merit consideration in the therapy of their cases.

1. The human race is peculiarly unisided. Corresponding to this unisidedness we have the development of only one speech center which is almost universally located in the hemisphere which controls the dextral hand. The association between the centers which control the movements of speech and those of the preferred hand is very intimate.

2. Left-handedness is not a habit but is due to some structural peculiarity of the cerebral hemispheres. Whatever the nature of

this peculiarity it is responsible alike for the preference of one hand and for the location of the active speech center in one hemisphere.

3. Among left-handed persons, speech defects very often appear at a time when they are forced to change their natural left-handedness into artificial right-handedness. Some evidence is to be had showing that the defect disappears when a return is made to the use of the naturally dextral hand. The hypothesis may be advocated that the task placed upon the left hemisphere in such a reeducation arouses the latent speech center here and results in a conflict of the two speech centers which manifests itself in speech defects such as stuttering and lisping.

4. Left-handedness should be encouraged where it is natural. Where a speech defect has occurred under such conditions, it is advisable to order a return to the use of the left hand. We are inclined to the opinion that speech anomalies are not the only undesirable consequence of this unnatural procedure, but are more apt to appear as using the right hand for writing, an accomplishment closely allied to speech, is the most common and first connection to be made.

When custom institutes reforms of *apparent* defects which produce *real* ones, it is time that Dame Custom change her ways. Sinistry should lose its unlucky connotations; rather it should be considered the unique, the different, the rather original way, and as we strive to attain this in many respects so left-handedness might better be considered boon than ban.

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TUBERCULOSIS OF THE LARYNX AND MOUTH.*

DR. WILLIAM WESLEY CARTER, New York City.

The patient, 46 years of age, a miner by profession, is from my clinic in Governeur Hospital. His family history sheds no light on his present condition. He denies specific infection, and says that he was perfectly healthy and strong up to two years ago. In March, 1914, he became hoarse and his throat became badly swollen and was so painful that he could hardly swallow. He lost his voice completely and his breathing was so obstructed that it was thought at times he would suffocate. He also developed a severe cough with profuse purulent expectoration.

At this time he consulted a laryngologist, who told him that the appearance of the larynx suggested tuberculosis, syphilis or cancer. The Wassermann test at this and at subsequent periods was negative. However, he was given, without beneficial effect, a course of mercury and the iodides. The sputum showed the presence of tubercle bacilli and the apices of both lungs were found involved.

About three months after the larynx became affected, an ulcer developed on the left buccal mucous membrane, near the angle of the lips; this rapidly increased in size and was very painful. The whole left side of his face became so swollen that his eye was almost closed. The patient was losing flesh very rapidly. He would cough all night and was expectorating large quantities of pus.

He entered a sanitarium in California, where he remained for several months.

His larynx became much better and his general health improved. The ulcer on his cheek, however, became worse. He went to Alaska to work, but the ulcer became so bad that he had to return. He then came to New York. Last November a specimen of sputum examined at Mt. Sinai Hospital showed tubercle bacilli in abundance. The larynx at this time was in a quiescent state. The ulcer on his cheek was actively inflamed and the whole side of his face was enormously swollen. A section of tissue removed from the margin of this ulcer showed tubercle bacilli, and the histological characteristics of a tubercular lesion.

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*Read before the Section on Laryngology and Rhinology, New York Academy of Medicine, April 26, 1916.

Since last November, the mouth lesion has been treated with x-rays applied every two weeks. A marked improvement as regards the swelling was noticeable at once, but the ulcer was just as large and painful as ever.

The larynx shows the epiglottis one-third destroyed and a thickening of the ventricular bands and the vocal cords. The larynx is practically cured, or at least, it is in a quiescent state.

The patient's lungs are extensively involved. He has lost 43 pounds since his sickness began.

The case is interesting as showing a larynx apparently healed of tuberculosis, and a very extensive and active tubercular ulceration of the buccal mucous membrane.

It also demonstrates the futility of the x-ray treatment for tubercular ulcerations of the mucous membrane.

A year and a half ago I showed before this section a case of tuberculosis of the nose which had been greatly relieved, at least where the skin was affected, by the local application of orthochlor-phenol. I shall try it in this case. The condition also suggests the use of tuberculin.

69 West Fiftieth Street.

Two Cases of Fatal Wounds Involving the Carotid Vessels and Presenting Unusual Features. H. LAWSON WHALE, Proc. Royal Soc. Med., Laryngol. Sec., Jan., 1917.

Case 1: The bullet passed through both antra and the nose and then deeply to the left vertical ramus of the mandible. On impinging on the anterior surface of the left mastoid the bullet had turned downwards deeply to the carotid sheath and was found at autopsy lying exactly in the bifurcation of the common carotid.

Case 2: The bullet had traversed the left antrum and mastoid smashing the facial "bridge" with the rest of the posterior meatal wall. There was never any indication that the bullet had involved any large artery but on autopsy the external carotid was found completely severed at the point of its final division into the superficial temporal and internal maxillary. This hole in the artery was clean-cut and from it there was a blood track up to the post-aural wound.

ED.

CHRONIC STENOSIS OF THE LARYNX, TRACHEOTOMY; DECANULATION AFTER A PERIOD OF 18 YEARS.*

DR. C. J. IMPERATORI, New York City..

The patient, M. S., aged 20 years, is presented before the Section with the interesting history of having worn a tracheotomy tube, continuously for 18 years. When 7 months old she became hoarse, and as her mother thought she had a cold, had her treated by several physicians for a period of about five months.

The child was brought to the Manhattan Eye, Ear and Throat Hospital, where a diagnosis of multiple papillomata of the larynx was made and unfortunately, was told that nothing could be done at that time, because of her age—13 months. Not being satisfied. the mother then began the rounds of the hospitals, where she usually was given some type of cough medicine. The child contracted a severe cold that produced marked dyspnea, and made her return hurriedly on the night of November 8, 1897, to the Manhattan where a tracheotomy had to be done by the house surgeon —Dr. Grant.

She remained in the hospital for about three weeks. Her age was then 26 months. About eight weeks after the tracheotomy she had rather a severe pneumonia, that lasted three weeks. During this attack she was very ill and the outlook was bad. However, she recovered and remained well until she was five years old, when she passed through an attack of measles and whooping cough.

When she was eight her voice was fairly good and she started in at school. During the day she breathed nicely with the hole in the tube covered. When night came and she would lay down it was always necessary to have the opening uncovered.

Just before and during the time of commencement of menstruation she seemed to get much worse for a period of some months. This passed off and gradually got better, so that she could wear a high collar and keep the opening of the tube closed most of the time.

She had a fairly good speaking-voice. The tube that she wore up to the time of decannulation, October 5, 1915, was the one or a similar sized one used at the original operation; that is a one-year size tube.

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*Read before the New York Academy of Medicine, Section on Rhinology and Laryngology, Feb. 23, 1916.

On October 5, 1915, having been referred to me through the courtesy of Dr. J. A. Mulholland, she came to the clinic of Dr. Harmon Smith, at the Manhattan Eye, Ear and Throat Hospital. Previously, that is in the latter part of June, 1915, a direct examination of the larynx was done and a small piece of redundant tissue from the left vocal cord removed and examined microscopically. The pathological examination of the tissue showed that it was papilloma.

The examination at that time showed a fairly normal larynx excepting the left vocal cord, which showed some papillomatous material on the under-surface of the anterior two-thirds.

Under cocain anesthesia, with the patient in the suspension laryngoscope, a mass of papillomatous tissue was removed from the left cord, and also a spur of granulation tissue from the posterior wall of the trachea, opposite the end of the tracheotomy tube. The tracheotomy tube was replaced. On October 7, having decannulated her, put in a large O'Dwyer intubation tube and in order that she would not cough it out, a post was screwed on the tube as suggested by Schmiegelow.

The tube was kept in from October 7 to the 13th. During this period there was some difficulty in swallowing owing to the size of the head of the intubation tube. This might have been overcome by the small-headed tubes of Lynah.

On October 13, extubation was done and the tracheotomy wound which had contracted considerably was packed tight in an attempt to make the wound close from below upward, and also in order to see whether or not she could breathe through the passages.

On October 26, some granulation tissue was removed subglottic by the direct method, and she left the hospital within the next few days.

On November 9, examination of the larynx shows both cords moderately thickened—especially the left anteriorly. Anteriorly and laterally the trachea shows some granulations around the tracheotomy wound.

Reasons for presenting the case before the Section are:

First. The length of time tube was worn; that is, eighteen years.

Second. Reason for tracheotomization being papilloma sufficiently large to cause obstruction.

Third. Also, the fact that no surgical intervention had been instituted to remove the papillomata.

Fourth. The partial or complete rest of the larynx for the period of eighteen years did not retard or inhibit the growth completely as one would usually expect. The amount of papilloma present when seen on October 15, was not sufficient to obstruct the breathing materially.

Fifth. As there had been several attempts made at different times to decannulate the patient but with negative results, it would seem that the reason for the above-noted failures were mainly due to panic on the part of the patient. In this case, the introduction of the intubation tube would seem to have acted to tide her over so that she did not experience this panic.

Jackson in his classification of difficult decannulation cases considers "panic" as a very important factor in the unsuccessful removal of a tracheotomy or an intubation tube.

17 East Thirty-eighth Street.

REPORT OF A CASE OF SEPTIC ARTHRITIS FOLLOWING A SUBMUCOUS RESECTION OF THE NASAL SEPTUM.*

Dr. Charles J. Imperatori, New York City.

D. B. had a submucous resection performed on his nasal septum December 23, 1915. While the deflection was sufficiently marked to occlude the nostril on one side, the operation was not difficult and did not take longer than ten minutes.

No adrenalin was used during the operation, and gauze sponges were used to keep the field clean. At the completion of the operation the nostrils were packed with vaseline gauze, and the patient returned to the ward. Within fifteen hours this packing was removed, and the patient allowed to leave the hospital. He was not seen again for one week, when he came back to the hospital during the night complaining of a pain in the left knee joint and a temperature of 105. His knee joint began to pain him two days previously.

During the week following the operation he said he felt too weak to come to the hospital and he was attended by his family physician. He also stated that he had some bleeding from his nose and that it was necessary to treat it by the application of some medicine and later had to have the nostrils packed to stop the bleeding. Of course, with the temperature, a septal abscess was suspected, but when the flaps were separated nothing was found. A few days later the flaps were further separated, higher up—and a little sero-sanguineous fluid came out.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, April 26, 1916.

It would seem that this may have been an infection secondary to the initial exploratory opening.

The temperature varied between 103 and 105. There was fluctuation within the knee joint on the second day of the patient's return to the hospital, which was the ninth day following the operation. Blood cultures taken at this time were negative. The joint was opened by a general surgeon. Considerable pus was found and an extensive destruction of the articular cartilages was manifest.

The patient made a gradual recovery and later a resection of the joint was done. Within two and one-half months the patient was discharged from the hospital with a stiff knee.

Reasons for reporting the case before the section:

First—No other demonstrable lesion that could be the focus of infection.

Second—Pain in the joint within five days after the operation. It is questionable whether it is possible to have a pathological lesion within a joint in such a short time.

Third—The seriousness of the complication, both from a medicolegal standpoint and also from an economic one.

17 E. Thirty-eighth Street.

Acute Pulmonary Abscess Treated with Artifcial Pneumothorax.

W. D. Tewksbury, *Jour Amer. Med. Assn.,* March 10, 1917.

Two cases are reported, the first a man 32 years old, the second, a woman 27 years old. In the first case the pulmonary abscess followed fracture of the superior maxilla and nose for which the patient was operated on; in the second case it developed after tonsillectomy. The author concludes that in view of the high mortality of acute lung abscess treated medically (60 per cent) or by rib resection (30 per cent), the latter operation often leaving a draining sinus for a year or more, artificial pneumothorax is a rational method of treatment in all cases having a communication with a bronchus. The two patients reported were cured. Ed.

OSTEOMYELITIS OF THE SINUSES OF THE NOSE, COMPLICATING SCARLET FEVER.*

Dr. H. L. Lynah, New York City.

Beckie L., age 13, was admitted to the Kingston Avenue Hospital on March 30, 1915, suffering with scarlet fever and ethmoiditis of three weeks' duration. On admission, the child was examined by Dr. Raymond G. Laub, who noted that there was a marked abscess of the septum and boggy swelling, which occluded the whole of the left nasal cavity. The pharynx was covered with a dirty gray exudate, and the left tonsil and peri-tonsillar space were enormously swollen, and of a purplish hue. The left side of the face was covered with an erysipelatous blush. The left eye was protruding and the lids were opened with difficulty. There was slight ulceration of the cornea, though the vision for objects was fairly good. There was a profuse discharge of pus from the nose. The patient was in the post-scarlatinal stage and desquamating. A dose of 20,000 units of antitoxin was administered by the family physician before admission, for he suspected diphtheria as the probable cause of the nasofrontal duct infection and the orbital cellulitis. The temperature was 104°, pulse 136, respiration 26. There were no otitic complications. The abscess of the septum and also the large pointing peritonsillar abscess were incised by Dr. Laub.

The following day, I saw the patient. The nares was still occluded on both sides, owing to the abscess of the septum. The large peritonsillar abscess was due to pus which had dissected under the mucous membrane and was also pointing under the mucous membrane of the hard palate. The whole of the alveolar process was boggy with pus, and all of the teeth on the left side. from the posterior molar to the anterior incisors, were freely movable. The abscess was also pointing in the left cheek, and definite fluctuation was felt under the skin. There was marked exophthalmos of the left eye, and there was a fluctuating subperiosteal abscess at the inner angle of the eye. This abscess extended across the bridge of the nose and caused swelling of the left eyelids.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, May 24, 1916.

X-ray and transillumination showed all the sinuses of the left side of the head to be involved. The ethmoid and frontal sinuses were opened externally, the usual incision being made. The outer wall of the frontal sinus was necrotic. Both frontal and ethmoid sinuses were filled with free pus and cystic polypoid tissue. The sphenoid ostium was enlarged. The middle turbinate bone was not removed. The antrum was opend extra-nasally. The orbital wall was necrosed and perforated. There was a considerable gush of pus on opening the antrum, and much polypoid membrane was removed.

The frontal sinus wound was partly closed with Michel clamps, and a wick of iodoform gauze was passed into the ethmoidal wound and also into the nares. Chloroform oxygen anesthesia was used.

No. 1. Patient on admission showing marked exophthalmos which persisted even after the radical frontal, ethmoid and antrum operations.

Cultures and smears taken from the frontal sinus, ethmoid labyrinth, and antrum showed staphylococcus pyogenes aureus and streptococcus pyogenes. The eye was covered with sterile boric acid vaseline, and a wet boric acid dressing was applied.

The following day, the general condition of the patient had improved, with a temperature of 100°. There was no improvement in the exophthalmos, and the cornea was hazy; though in a bright light the patient could count fingers. An attempted fundus examination by Dr. Wootton was unsuccessful.

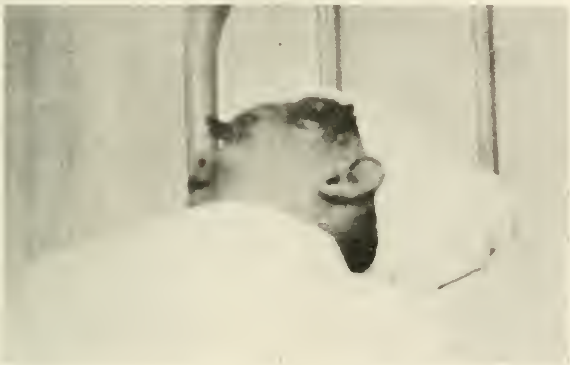
On dressing the wound, there was considerable free pus following the removal of the wick, which apparently came from the frontal sinus. There was, however, no fluctuation over this area. The wound was dressed every day. By the fourth day after the operation the general condition of the patient had improved markedly and the exophthalmos was subsiding, but there was still considerable discharge of pus at each dressing, which could not be accounted for.

On April 4, two weeks after the operation, the exophthalmos became marked and there was considerable swelling in the frontotemporal region, and also about the frontal sinus wound which was bulging. The child was sent to the operating room; the frontal sinus wound was opened and a horseshoe incision made in the temporal region after pus was located by a small incision. This large pocket of pus was the undoubted cause of the free evacuation of pus from the wound at each dressing, but as there were no symptoms to form a guide and the temperature was normal, the second abscess which must have been present at the time of the original operation was absolutely overlooked. At this operation, the dura was found to be uncovered for an area of 3 cm. in diameter. There were also many large sequestra which were removed from the outer orbital angle, and part of the malar bone was rocked off. The whole area of bone about the temporal, as well as that of the frontal sinus, was necrotic. There was a large orbital abscess, and Dr. Wootton thought the globe of the eye would undoubtedly be lost. There was marked bulging and tension on the globe.

No. 2. Showing incision for enormous temporal abscess. The exophthalmus has subsided owing to rupture of the orbital abscess.

The day following the secondary operation, the temperature rose to 102.4°, but fell gradually to normal the following day. On removing the dressings the day after the operation, it was noted that the exophthalmos had disappeared. On opening the lids, the cornea was very cloudy and ulcerated. The disappearance of the exophthalmos was further noted to be due to the globe of the eye having ruptured. There was a profuse discharge of pus, and the wicks seemed to block up the cavity and prevent drainage,—therefore two rubber catheters were introduced from the temporal wound and passed through to the ethmoidal fistula; and by constant irrigation with boric acid solution good drainage was established. A large wet dressing was applied.

On the third day after the operation, the sutures were removed, and as none of them had held the wound gaped open and presented a rather sorry picture. Constant irrigations were maintained for a period of a week, after which time the tubes were removed and the wound was lightly packed with plain gauze. The wounds slowly healed, but there was a slight discharge of pus from the orbit, off and on, for about a month after the healing of the other wounds. The temporal wound has opened and closed from time to time, and there is a fistula which passes downward and backward, apparently under the frontal convolution.



No. 3. Through and through catheter drainage which was the only method that allowed free drainage.

The child has made an apparent recovery, but Dr. Hurd, who was good enough to see the case with me, tells me that he has never seen an osteomyelitis due to the streptococcus recover, and that sequestration and the multiple new foci of infection develop from time to time. It has now been over six months since the child has had any trouble, but she is still under constant observation. The sinus in the temporal region has been injected with bismuth paste from time to time and it closes, but a new pocket of pus will form and it again opens.

The plastic operation which was attempted after the dura had been covered with granulation tissue has resulted in a fairly good scar. There is a saddleback nose, due to the loss of the septum. The left cheek, in spite of the loss of part of the malar bone, is somewhat hypertrophied, owing to the enormous amount of infiltration in the cheek. The left eye is unfortunately lost, as the result of the enormous orbital abscess and the sloughing of the cornea; however, a small portion of the cornea remains. The orbit ruptured through the cornea, and for a long time pus drained from the globe through the sinus in the anterior chamber.

No. 4. The enormous area of dura uncovered. After granulating the plastic operation removed the greater part of the scar, and at the same time made a firm dural covering.

I would be glad to have any suggestions which may be made about the further care of the case. An artificial eye will be set in, as there is a fairly good stump for it.

Repeated Wassermann and tuberculin tests were all negative. Antisyphilitic treatment was administered with an endeavor to provoke a positive Wassermann, but this treatment only upset the patient, and it was discontinued.

127 West Fifty-eighth Street.

CALOMEL FUMIGATIONS IN THE TREATMENT OF CONSTITUTIONAL AND LOCAL CONDITIONS. A SIMPLE APPARATUS.*

DR. EDWARD J. BROWN, Minneapolis, Minn.

The *Deutsche medizinische Wochenschrift,* May 13, 1915, has an interesting paper by Dr. Jul. Frankenstein, with description of a rather elaborate apparatus for the inhalation of the fumes of a superheated mercury amalgam, the fumes to be inhaled either with compressed air or carbonic acid gas. He mentions one case, the diagnosis confirmed by the presence of spirochetes, in which after twenty inhalations there was a negative Wässermann, which was also negative one year later. As a result of nearly three hundred cures effected by this method, and in view of the various inconveniences and dangers of other methods, he warmly commends that of inhalation.

Calomel fumigations were formerly prominently mentioned by British writers as a means for mercurialization. That this method has not been more frequently availed of is probably due to the lack of a convenient apparatus. The English used the fumigations as a substitute for inunctions, the fumes being either absorbed through the skin or sometimes inhaled in a closed room.

During the past summer I modified my hot air apparatus, described in the *Journal of the American Medical Association,* June 21, 1913, by the substitution of a bunsen burner as a source of heat, and the introduction of a three-inch section of iron tubing of half-inch bore to admit a small phial for the calomel. By a reducer six inches of quarter-inch tubing is connected with the tube containing the calomel, and the latter by a short rubber tube connected with a conical nasal tube of glass, or the fumes may be thrown directly into a large glass tube held in the mouth. The fumes from the vaporization of any salt of mercury or the metal itself are more or less irritating to the throat and bronchi. In my earlier work I used the mouthpiece and, to avoid the irritation, at the same time I threw through one naris a fine vapor of a camphor-mentholated oil. This obviated the objection of irritation to throat and chest but was so objectionable to some patients that in my later work I have used the nosepiece altogether. By using a minimum of air irritation is avoided and efficient doses may be administered in sittings of from ten to thirty minutes. The English used calomel for fumigation purposes because it was vaporized with less heat than other salts of mercury, and I have used it for the same reason. A writer whose name I have lost, speaks of vaporizing a mercury precipitate by passing through it suspended in cotton in a perforated glass capsule, a current of air heated to 150 C., but I know of no precipitate of mercury, which vaporizes with as low a temperature as calomel. Applying the heat from a bunsen burner to my apparatus cold fumes of calomel will be deposited on a cold glass slide within three minutes; the fumes of mercury and chalk in four minutes, but much less profusely; the fumes of yellow oxide of mercury in six minutes. Both the gray powder and the yellow oxide give off fumes which are possibly less irritating to the throat and lungs than those of calomel but they are given off more slowly and require more time. I find that fifteen grains of calomel will have disappeared in forty-five minutes, while in the same time only one-third of the same weight of yellow oxide will have been vaporized, and the remainder will have apparently changed chemically to a more reddish yellow and ceased to yield vapors. My cases have been treated with calomel.

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*Read before Hennepin County Medical Society, May 1, 1916.

Mrs. X. was treated by me for specific iritis and deep ulceration of the tonsil seven years ago, being at the time and for some time afterward, under the care of the family physician who gave her mercury and postassium iodid. She had another iritis three years ago while in a distant part of the country. She came to me in September, 1915, complaining that she had had a cold all summer and, for three weeks past, pain, tenderness and some swelling of the tissues in front of the right antrum, apparently a periostitis of that part of the superior maxilla. There was a deep ulcer of the septum and also of the inferior turbinal of that side. In addition to local treatment inunction of mercurial ointment was ordered. After eleven days, as family conditions made the inunctions practically impossible, I suggested inhalations. These were begun on September 21 and after six inhalations the local signs had entirely disappeared. On December 10, after forty-five inhalations the Landau color test was negative. She had been very active as housekeeper but had nevertheless gained in weight and general feeling of well-being.

Z., 28, barber, consulted me December 4, 1915; had had irritation in throat and cough for a long time, getting worse of late, especially since a local treatment by some physician. No specific history but had gonorrhoea five weeks ago. I found no spirochetes but the Landau color test was positive. There was a small ulcer on each side of the base of the uvula, also a mucous patch on the soft palate. He was given calomel fumigations daily for from ten to twenty minutes, and after seven inhalations the throat was healed, he was feeling well and had greatly increased appetite for his food.

He had a large adenoid and suppuration of the ethmoid on the right side. The adenoid was removed and the ethmoid treated with hot air, negative pressure and the injection into the vacuumized sinuses of hot calomel vapors. After ten weeks the vapors were used only once a week and the patient was given a twenty-five per cent calomel-kaolin powder for insufflation, and for internal use a solution of arsenic trioxide. On March 30, he appeared perfectly well including his ethmoiditis, though there was a large plaque on his tongue, of which he made no complaint. A Landau color test some days before had been positive. A luetin test in April was negative.

Mrs. V. has suffered from double ethmoiditis and left antral suppuration for five or six years. After I had removed polyps and exenterated both ethmoids there was great improvement in the condition, but the antral suppuration persisted in spite of much irrigation with alkaline wash, later with alcohol, and still later with air douche followed by hot air and iodoform vapors. Then for some weeks kaolin powder was blown in after the use of the air douche. This lessened the discharge, which had been either increased or uninfluenced by the previous treatments. After some weeks of this I introduced the vapors of calomel once and dry calomel powder five times, completely curing the discharge in two weeks. The cure has persisted in spite of a severe cold during the grip epidemic of December.

B., 24 years old, has had double ethmoid and antral suppuration for years. The ethmoids had been exenterated and the left antrum widely opened. He had washed the antra and insufflated boric acid, for a year past, with only temporary and moderate benefits. The left fronto-nasal canal had also been enlarged by rasps. One insufflation of calomel powder into all three sinuses after the air douche produced a marked effect upon the suppuration, and incidentally a moderately severe purging. To guard against excessive dosage of the calomel it was ordered as a five per cent powder in boric acid to be used with moderate freedom. The patient has spent the winter in the northern woods without a single serious cold and writes on April 8: "I have not used the powder very regularly but only as I felt the need, when any congestion of the nasal passages came on, and it has always given me relief so that I have had very little trouble."

H. R., 39 years old, came on September 13, suffering from meibomian styes and marginal blepharitis of the left upper lid. After eight treatments including opening of cysts and cauterizing of lid margins with carbolic or strong solution of silver nitrate, with hot fomentations, boric wash and yellow oxide of mercury ointment at home, the eye got better and treatment was discontinued. On November 21 he returned with the lid worse than ever. The lashes had previously been clipped and this was now repeated, and after the removal of the crusts the lid was exposed for ten minutes to the hot calomel vapors. This was repeated on November 23 and 25 with remarkable improvement. On December 3 there were only two small scales and on December 8 the eye was apparently well with the exception of slight thickening of the lid.

It has long been known that calomel is one of the most powerful germicides, and when it is used in the nascent form in connection with hot air it is reasonable to believe that there is a large field where it may be employed with remarkable results.

Dr. Lewis A. Coffin, in the November, 1915, issue of THE LARYNGOSCOPE, and Dr. Harmon Smith (*American Laryngological Association*, June, 1915) report the employment of negative and positive pressures alternately in the treatment of nasal sinus diseases, the positive pressure forcing oil nebula loaded with either chemicals or lactic acid bacilli into the vacuumized sinuses. I have found my apparatus perfectly adapted to that purpose. Instead of the variously loaded oil nebula, however, I have used the hot vapors of calomel.

While experimenting with the mercurial vapors to determine how they might be inhaled with the least irritation to the throat and lungs, I inhaled the fumes through my nares perhaps a half dozen times and not to exceed a half minute on each occasion. I had myself had a chronic right antral suppuration of many years' standing with evidences of right and left ethmoid disease of sufficient severity to have caused a small positive para-central scotoma on the right. In spite of anterior middle turbinectomies, and various forms of treatment, the most effective of which was that by hot air and negative pressure, the discharge persisted, could be removed by posture and negative pressure, and often drained suddenly with a favorable position of the head. You can imagine my surprise when after these inhalations of the calomel fumes, I discovered that my trouble had entirely disappeared so far as any signs of suppuration were in evidence.

I had for many years suffered from a mucous colitis, frequently accompanied in late years by obstipation, pain and mucus discharges. I had attributed the trouble to infection from the nasal sinuses, and consequently was not surprised to find improvement following the arrest of the sinus disease. However, in January, following a mild rhinitis, there was a sharp attack of the colitis with pain and obstipation. Following an irrigation of the colon, which brought no fecal results, I forced into the rectum with a bicycle pump the hot vapors of ten grains of calomel, occupying probably seven or eight minutes, massaging the abdomen and using sufficient force with the pump to cause slight discomfort. The next morning there was a free and fairly normal movement and such movements have continued ever since with scarcely a suggestion of the old trouble.

Mr. C., 64 years old, a business man, with negative history except having had a gonorrhoea about his thirtieth year, came to me in December complaining that he had had a slight burning of the right side of the throat extending down the neck for two months, worse for four or five weeks. He had a slight morning cough with the raising of a little whitish secretion. There was tenderness to pressure of the region of the thyroid cartilage and the glands in front of the sterno-mastoid were somewhat enlarged and tender. There was a perforation of the nasal septum and evidence of posterior nasal sinus disease. The neck was short and thick and the epiglottis so deformed that I got very unsatisfactory views of the larynx and subglottic region, and the examination was negative. He submitted to a Wassermann which was negative but the Landau color test was positive. I told him the trouble was probably a subglottic one and either specific or malignant. While we were waiting for the Wassermann, I suggested calomel inhalations, as he did not wish to use inunctions. He came December 28 and on January 3 he had had three inhalations of about ten minutes each, with the result that all tenderness and pain of the throat and glands had disappeared. I then gave him a longer inhalation (combined with the oil vapor which he did not like). As he refused further treatment of that kind I persuaded him to insufflate a twenty-five per cent calomel-kaolin powder. As the Wassermann was negative he refused further treatment, saying he was all right.

I have ordered the twenty-five per cent calomel-kaolin powder in several specific cases for home treatment with apparent good results.

One case of tubercular sinus of the face, which had resisted for a long time injections of tincture of iodin, was promptly and remarkably improved by a single application of the calomel vapors.

I have used in a considerable number of cases of suppurative and infective nasal diseases the five per cent calomel-kaolin for insufflation, and have directed patients with sinus disease to use the powder freely in addition to the alkaline wash and making frequent daily use of negative pressure by closing the nose and mouth and strongly inhaling. Drainage is at the same time favored by posture, on either side for the lateral sinuses or with the head bent strongly forward for the sphenoids. The results have been decidedly good.

In addition to the alkaline wash which I have for many years advised school children to use as a prophylaxis against school infections, I have lately advised the free use of the five per cent calomel-kaolin. If as S. A. Friedberg (*Journal American Medical Association*, March 11, 1916), claims, diphtheria cases clear up more quickly when kaolin powder is freely used in the nose and throat, it is an entirely reasonable proposition that all these infectious diseases may be either prevented or favorably modified by the use of a much stronger and equally bland germicide, to which children make not the slightest objection.

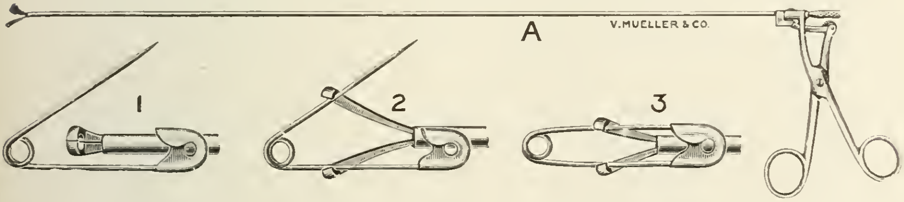
Since this paper was written I have had the following case of frontal sinusitis: J. C., 24 years old, a university student, came on March 12 with severe headache and a temperature of 100°, pain and tenderness of the left frontal region. He had had grip ten days before but had apparently been as well as usual for some days. He had some slight sinus discharge most of the winter, part of a chronic trouble for which the anterior ethmoids had been exenterated. He was given a dose of calomel and an injection of one-twentieth cc. of the Mulford mixed influenza bacterin. The frontal sinus was probed under cocain and epinin and after the use of hot air and negative pressure, calomel was blown into the nares. March 13 the morning temperature was 96.5°, and he felt much better. At 6 p. m. the temperature was 100°, and he had had severe pain for some hours. The sinus was catheterized, washed with alkaline solution, dried with hot air, and the vapors of five grains of calomel slowly passed through the catheter. On the fourteenth he felt well; no pain or tenderness, temperature normal; he can easily exhaust the discharge from the sinus by closing the nose and mouth and inhaling. Only a small amount of discharge at any time. On the sixteenth temperature 97°; had slight pain yesterday, and on the sixteenth, eighteenth and nineteenth hot vapors were given after negative pressure. Practically no discharge. On the twenty-first, hot vapors after catheterization and air douche. On the twenty-second, alkaline wash through the catheter followed by alcohol, hot air and calomel vapors. On the twenty-fifth, no discharge or tenderness. Repetition of alcohol and vapors. On March 6 the patient reported that he was perfectly well. That the disease of the frontal sinus was a chonic one was shown by the chronic discharge and the fact that the other sinuses were apparently not involved.

524 Syndicate Building.

NEW SAFETY-PIN CLOSER FOR ENDOSCOPIC USE*.

Hubert Arrowsmith, Brooklyn, New York.

This pin closer was devised for simplifying the removal of safety pins which are among the most difficult foreign bodies that the surgeon is called upon to extract from the air passages. It is to be commended for its extremely simple construction and its small size, being only 3 mm. in its greatest diameter, which makes its introduction through the 5 mm. bronchoscope easy and gives plenty of room for ocular control in the larger tubes. It is manipulated by one hand. Its grasp is sufficiently strong to dislodge any pin that may have penetrated the tissues and it does not matter whether or not the pin is locked on withdrawal, as its point will be perfectly guarded by the forceps. Most of the old pin closers require the use of both hands and are too large for use through the smaller tubes. This instrument will overcome these objections.



170 Clinton Street.

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*Presented before the New York Academy of Medicine, Section on Rhinology and Laryngology, October 26, 1916.

TWO UNUSUAL CASES OF MASTOID DISEASE WITH SEVERE COMPLICATIONS, OPERATIONS, RECOVERIES.*

Dr. J. Clarence Keeler, Philadelphia, Pa.

The first case is one of chronic mastoiditis complicated by a palsy of the left facial nerve, an unresolved unilateral broncho-pneumonia, pericardial effusion with adhesions to the parietal pleura and bilateral suppurative cervical adenitis, with operation under ether, followed by recovery.

The second case is one of bilateral mastoiditis complicated by a bilateral bronchopneumonia, circumscribed meningitis, with recovery after operation under ether anesthesia.

Case 1. Lillian C., age 3, was admitted to the Jefferson Hospital, August 5, 1915. Diagnosis: Chronic mastoiditis, left side, and palsy of the left facial nerve.

The family and personal history revealed nothing of significance except that the patient had had one attack of whooping cough.

Examination of the *head and neck* showed nothing abnormal except a scar on the back of the neck, which seemed to be the result of a glandular suppuration, probably tubercular.

The *right ear* was normal.

The *left ear* was discharging. There was a large tumefaction over the left mastoid. The *tympanic membrane* had a large central perforation with granulations extending into the auditory canal. A slight mucous nasal discharge was present. The *teeth* were poor; the *tongue* coated. The *pharynx* was injected. The *tonsils* were moderately enlarged. The *submaxillary* and the *posterior cervical glands* of both sides were enlarged, but the left the more so.

Thorax: Expansion was fair. On percussion there was impaired resonance at the left apex. The breath sounds here were almost tubular, but there were no rales upon deep breathing.

The *apex beat* was outside the nipple line at the fifth interspace. The cardiac rhythm was imperfect and influenced by respiration. The first sound was of fairly good tone; the beat frequent. There were no murmurs or thrills.

The *abdomen* was large and slightly tympanitic, otherwise normal. The *face* was of the Angelic type, very pale and icteroid. There was loss of muscle control on the left side, assymmetry exaggerated by laughing or crying. The closure of the left eyelid was incomplete. There was salivary dribbling on the left side.

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*Presented by invitation, before the Section of Otology and Laryngology, College of Physicians, Philadelphia, December 15, 1915.

A radical mastoid operation was decided upon August 6, 1915. After the usual preparations, an incision over the mastoid opened into a large collection of foul-smelling pus and exposed an extensive erosion of the cortex, through which granulations extended. That portion of the bone in front of the erosion, to the floor of the tympanum, which represented the posterior osseous auditory canal, and a portion of the mastoid cells with the facial canal extending through it, composed a sequestrial mass. This mass was removed. Cholesteatomatous masses were also found. The malleus and incus and the facial nerve were not seen. They had evidently been destroyed by the suppurative process. The stapes was in position. After the exenteration of the remaining necrotic cells, the Eustachian tube was cauterized with phenol. The posteriol cartilaginous canal was divided and the flaps made in the usual way. The necrotic soft parts over the mastoid were removed. The field was cauterized with phenol. The skin over the posterior portion of the mastoid was dissected up in order to secure approximation. The mastoid cavity was packed with three small pieces of iodoform gauze and allowed to drain through the auditory meatus. The wound was closed posteriorly with a row of deep interrupted cat gut sutures and then by a row of linen, through and through sutures. The ordinary mastoid dressings were applied and the patient was returned to the ward, where she received supportive treatment.

August 7. Laboratory reports of the cultures taken from the ear, at the time of the operation, showed *micrococcus aureaus* and *albus* and *bacillus pyocyaneous.* The Wassermann and Widal reactions were negative. ,

The blood examination showed a slight leucocytosis and hemoglobin 60 per cent.

The linen stitches were removed four days after the operation. The wound was clean and healing by first intention.

Eighteen days after the operation an examination of the thorax revealed a larger area of dullness. Fine crackling rales were heard on deep inspiration. A suppressed cough was present but there was no complaint of pain.

On August 27, a vaginal discharge was detected by the nurse. Microscopic examination showed Gram negative intracellular diplococci. The patient was isolated at once. At this time there were superficial areas of ulceration on the neck and on the right ear.

Smears made from these lesion revealed micrococci but no tubercle bacilli.

September 1. X-ray report: The heart is somewhat enlarged and considerably displaced to the left. There seem to be adhesions between the parietal pleura and the pericardium.

September 4. One month after the mastoid operation, the cervical adenitis became extensive and had evidently broken down. After evacuation of the pus, the temperature gradually returned to normal and recovery was then uninterrupted. The patient was discharged November 19, 1915.

This case is of special interest for the following reasons:

1. Because of the preservation of the stapes and the remarkable resistance of the labyrinth to the prolonged infection which caused so much destruction of the surrounding tissues.
2. Because the facial nerve did not become involved until the ear had discharged continuously for more than one year.
3. Because the vaginal infection is unusual.
4. The heart and lung conditions existed at the time of admission.
5. While the temperature was highest and the pulse the most frequent, there was present a distinct cervical, glandular, suppurative process.
6. The bronchopneumonia and the heart lesion were apparently not unfavorably affected by the administration of ether.
7. The fortunate external rupture prevented possible intracranial complications.
8. The facial paralysis and the consequent disfigurement will be constant reminders of the evils of procrastination.

Case 2. Samuel D., seen in consultation, April 24, 1915.

The patient was 18 months old and suffering from a bilateral bronchopneumonia and meningitis. There was a history of discharge from the left ear since the last six months.

The temperature was 105, pulse 160, respiration 65. Body in opisthotonos; eyes rolled far up and the pupils only partially visible.

An examination of the right ear had not been made. It presented a red, bulging tympanic membrane, which was immediately incised under local anesthesia. Pus fairly squirted out of the auditory canal.

Twelve hours later the temperature had fallen to 103°. During the following night, however, it had again risen to 104°. Simple bilateral mastoid operation was advised in spite of the presence of the double bronchopneumonia, in order to prevent, if possible, the meningitis from becoming septic.

On admission to the Jefferson Hospital, where she was then sent, the temperature was 104.8°, pulse 160, respiration 26.

When brought into the operating room, the patient was in a moribund condition. There was a thick mucoid exudation on the eyes. The face was ashen and the appearance cadaveric.

Oxygen and restoratives were administered. The right mastoid when opened was found filled with pus under pressure. After complete exenteration of the mastoid cells a communication was established through the tympanum and the external auditory canal. The mastoid cavity was packed with iodoform gauze, freely drained and closed with interrupted linen sutures.

The left mastoid was opened and found full of granulations. There was an erosion through the tegmen antri leading to the middle fossa of the skull, where an extradural abscess was found.

A complete exenteration of the necrotic mastoid cells was made and a communication was established between the tympanum and the auditory canal. The wound was dressed similarly to that of the other side.

Very little ether was required because of the patient's comatose state. Realizing that time was an important factor, only twenty-four minutes were consumed in the operating room. Reaction was slow. Oxygen was administered, heart stimulants given and artificial heat applied. On the following day, the patient was sent to the roof garden for open air treatment of the pneumonia. An improvement was noted at the end of forty-eight hours.

The dressings were changed daily.

Two weeks after the operation, a small abscess on the left arm was opened by the resident physician, after which the temperature became normal and progress toward recovery went on rapidly.

The patient was discharged one month after the operation.

Some of the interesting facts of this case follow: Double bronchopneumonia concurrent with bilateral mastoiditis terminated in recovery, only in a few reported instances.

The meningitis was fortunately circumscribed and was not purulent as the examination of the spinal fluid, one day after the operation, showed.

The case teaches the importance of examining both ears. In this patient the right one had been overlooked.

The value of rapidity of operation on cases of this serious character cannot be overestimated.

No matter how hopeless the patient, suffering from middle ear disease with mastoiditis may appear to be, and no matter what complications may be present, it would seem from this case, that it is good surgery to operate and to relieve the pressure as soon as possible.

I wish to express my thanks for the aid given to me by the Jefferson Hospital laboratories and by my colleagues.

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254 South Sixteenth Street.

FRACTURE OF THE TYMPANIC PLATE OF THE TEMPORAL BONE.*

DR. J. CLARENCE KEELER, Philadelphia, Pa.

Fractures of the tympanic plate of the temporal bone are so rare that many of the leading text books either on surgery or on otology fail to mention the condition.

This fracture occurs as result of indirect force, the condyle of the mandible being driven backward with great force against that portion of the posterior wall of the glenoid fossa, which forms the anterior wall of the bony auditory meatus.

Warren and Gould[1] describe a case in which a blow on the point of the chin fractured the anterior walls of both right and left meatuses, closing each meatus about one-half.

Similar cases are reported by Schwartz[2] and Beach[1]. Boyer describes a case in which the condyle of the mandible was driven through the meatus into the middle fossa of the skull.

Kerrison reports the case of a young lady, who, while falling in a faint, struck her chin and fractured the left tympanic plate by the indirect force. There was bleeding from the left ear with inflammation, but without rupture of the tympanic membrane. There was no impairment of hearing. There was a linear laceration along the floor of the bony canal without involvement of the deeper portion of the bone.

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*Read before the Philadelphia Laryngological Society, February 1, 1916.

In 33 cases of fracture of the walls of the meatus, of the superior and posterior as well as of the anterior wall, fifteen were due to violence on the chin or on the ramus of the mandible.

The case presented is M. W., a girl, age 17, who was thrown from a motorcycle in July, 1914, landing on her chin. She regained consciousness twenty-four hours later and complained of intense occipital pain, worse when in the supine and lessened when assuming a semi-recumbent posture. She was unable to sit up, unassisted until after two weeks or to stand alone until after three weeks. The mandible was fractured at the symphisis. The two right, upper, incisor teeth were broken. There was bleeding from the left ear for forty-eight hours, at first profuse, then gradually subsiding. Five weeks after the accident the patient applied for treatment at the ear dispensary of the Jefferson Hospital. There was pus in the left auditory canal. The tympanic membrane was lacerated. There was an irregular, inflamed elevation on the floor of the canal, obstructing half its lumen. The right ear appeared normal. There was distressing tinnitus and loss of aerial conduction. Weber's test to the injured side.

The patient has recovered from the middle ear infection and her hearing is restored. The x-ray plates show the fracture at the symphisis, the broken teeth, a fracture of the left condyle of the mandible and a fracture of the tympanic plate of the temporal bone with upward displacement.

254 South Sixteenth Street.

Chronic Multiple Arthritis, 'Due to Bacillus Mucosus. GEORGE F. DICK, *Jour. Amer. Med. Assn.,* Feb. 24, 1917.

Two cases of chronic multiple arthritis have been described which resemble each other in every way. From the throats of both these patients there were isolated bacilli of the same group of Perkins' classification of *B. mucosus.*

On intravenous injections into rabbits, the bacilli constantly produced an experimental arthritis which varied from an acute hemorrhagic inflammation to a chronic deforming arthritis. ED.

EDITORIAL DEPARTMENT

PERORAL ENDOSCOPY AND LARYNGEAL SURGERY.

Dr. Chevalier Jackson, Philadelphia, Pa.

TONSILLOSCOPY.

The newest form of peroral endoscopy is tonsilloscopy. While the tonsil was the first studied of all the tissues within the sphere of the rhino-laryngologist, yet there has always been a vagueness in the mind of most of us, clinically, as to what, in certain border line cases, constituted disease considered apart from mere size. It has been no uncommon thing in a border line case for one competent man to state that the pair of tonsils in question were diseased and should be removed; while another man, equally well trained, would as firmly insist that the tonsils were practically normal. Such are the results of surface inspection. Histological studies have been extensive; but biopsy is of limited usefulness. What has been most needed is a means of examination of the interior of the living tonsil. Hence it is interesting to note that a new and promising field for such clinical study has been discovered and developed by the ingenuity of Dr. Thomas R. French.* The tonsil is examined, in situ in the living by the transmitted light of a pair of small electric lamps that are placed behind the tonsil. The tonsilloscopic tube carrying in its proximal end a lens of from five to eight diopters, according to the visual needs of the tonsilloscopist, is placed against the anterior surface of the transilluminated tonsil. It would be a great injustice to the new method to attempt here to epitomize the various appearances seen in disease as contrasted with those of health. The matter is too important to risk misrepresentation. Everyone should read the description in full as written by the author, and should then educate his eye to the perception of the distinct differences between health and the various phases of disease. Fortunately this is very readily done by Dr. French's method of "external tonsilloscopy." After removal tonsils are examined by the external tonsilloscope and the appearances compared with the subsequent tissue examination. Everyone is not blessed with the delicate sense of artistic color perception possessed by Dr. French; but anyone can educate his eye to perception of the differences between the normal and abnormal tonsilloscopic appearances. These have been codified by Dr. French into six classes. In addition to a description of the technic of tonsilloscopy he gives, from the study of the tonsil in 333 cases, interesting data that are invaluable to all who have to deal with tonsils.

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*The Tonsilloscope, by Dr. Thomas R. French, New York Medical Journal, May 20, 1916.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY,

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Twenty-second Annual Meeting, May 5 and 6, 1916.
White Sulphur Springs, West Virginia.

The President, Dr. S. MacCuen Smith, Philadelphia, *Presiding.*

(Continued from page 144.)

"This necessitates the classification of sound to the region of the tympanic cuspoid. For example: Let us assume that C (256) affects the drum near the periphery, while C (512) affects it near the center. Then any sound having a vibratory frequency between 256 and 512 will affect the drum at some point between. The sounds recorded on the drum are annular but not circular, since the drum is eccentric. It follows then that all the sound which the ear is capable of recording must be recorded between the periphery and the vertex at certain definite points.

"In other words, each portion of the drum responds to a certain rate of vibration which is transmitted to the middle ear by the ossicles.

"Thus any injury to the periphery of the tympanum would tend to cause a deficiency in recording the vibration corresponding to the portion.

"According to Dr. W. Sohier Bryant, of New York, the average 'compass of sound conception' in the human being is between 28 single vibrations per second and 100,000 single vibrations per second.

"Now if a straight line be drawn from the vertex to the periphery of the tympanum, and this line be measured, he can mathematically determine the space given to each separate sound upon the drum. This may seem impractical, but it is given to introduce the following dependent discussion.

R—Range.
H—Highest sound capable of being perceived.
L—Lowest sound capable of being perceived.
D—Distance from drum vertex to periphery, .5625 cm.
X—Distance devoted to each particular sound.
N—Frequency of vibration of the note in question.

"X is destined to be very small distance because of the large number of sounds which have to be accommodated in a small distance.

"In a similar manner the exact position of X can be determined on the line from the simple proper form (H—MX—M) where M is the distance along D measured from the vertex of the cuspoid drum.

"By being able to produce a sound of any pitch and intensity or key which can be accurately measured, why is it not possible to determine just what portion of the cochlea is not functionating or responding?

"It will be in the middle of the spiral of the cochlea if sound fails in the normal octave that we hear. In the upper portion of above the recognized octave. Or in the vestibule if there is a lack of balance. I have just asked the question of all present who have done lumbar punctures if they have ever observed epilepsy later, as I have heard of its cure.

"As we know, epilepsy is a falling sickness and is accompanied by an aura of violet to blue and sometimes other colors. Is there not, then, an axis depending upon the spinal and arachnoid fluid and its bipolar relation to the parilymph and endolymph to be determined and recognized in the disturbances of epilepsy? By more specific study a possible cure could be established even to such remote procedure as a removal or rearrangement of a utricle or saccule.

"Furthermore, as I have been able to establish a seven-fold pathway for voice which is heard by the ear, hence by recognizing the factors new diagnostic methods of great value can be established by those who use human ears and human voices as their standard, which, as Dr. Harris says, is at present the best guide.

"Regarding the statement that hearing reduced 1/30 of the normal, the auditory center receives only 1/3 of the normal impulses I believe is misdirected.

"Let us take, for example, the pyramid of the nasal chamber on one side. This pyramid is divided into three small pyramids by the turbinate bones. Thus we have twelve functionating surfaces instead of three. So, too, the oral cavity being one chamber on a double pyramid is divided into twelve surfaces by the tongue and palate.

"It is not reasonable, then, to assume that the tympanum can be divided into 1/12. Last, each ossicle may represent the hypothenuse of a Pythagorean triangle, acting in such a case as a lever with the ratio 3, 4, and 5, hence each ossicle would represent a conducting power of 1/5 or a total of 3/5. Hence we have a series of possible combinations of twelfths and fifths, depending upon the extent of the loss of function.

"Pneumo-massage, if properly administered, tends to act as a circulatory stimulant by increasing or decreasing the rate of blood-flow by its action through the pressure on the vessel walls. Also the general circulation of the head seems to be toned up.

"As a suitable instrument for testing the ears, in view of the fact that different parts of the drum are affected in different places, tests for deafness must be made accordingly.

"It has been one of my contentions on every side that a method of standardization must be resorted to before we are able to really approach any goal of perfection, especially any phenomena connected with human voice and ear.

"Most of the ear tests in use to-day are very poorly suited for the human ear. A test should be made by a machine or instrument capable of producing continued sound or sounds, either simple or compound, of any desired amplitude or frequency. The machine must be capable of producing sounds of different pitches or volumes in rapid succession. Such a machine should come as near the human voice as possible. It would make a better testing machine than the human voice, as the human voice suffers fatigue, etc., all of which might alter pitch, power, or resonance, or all three.

"The modern tests of Rinné, Galton, etc., all fail to fulfill some part of the requirements. In the Galton whistle the sound is not continued nor can it be controlled as it should. In tuning-fork tests the amplitude of the fork varies with the operators because no two operators strike the fork alike, nor does the same operator strike it always with the same force. Similar objections are to be had with most other tests.

"I have invented an electric sound-producing system which I believe satisfies all the requirements set forth by Dr. Harris for a mechanical device. It is a useful and accurate method of testing as I have found.

"By varying the resistance of the capacities of the condensers on the circuit any desired pitch may be obtained. By using variable condensers notes are easily obtained. The intensity can be varied rapidly by altering the current. Notes of any desired frequency and amplitude may be produced as rapidly as desired. Its pitch is controlled by condensers while its volume is electrically controlled by a rheostat. A constant supply of current makes its operation continuous. The pitch may be altered to suit any special case by merely changing the capacity of the condensers. It is of a modern type and arranged like a piano, the number of keys may be increased up to as many octaves as desired, equal to the range of the voice.

"I have had a device designed by a well-known musical instrument concern to produce sounds and the corresponding color to be used both in auditory re-education and auditory testing. Owing to expense and complexity of the machine it was discontinued. Instead, the audion device was used with unusual success. The audion has not as yet reached its completeness for by a change in filament I have succeeded in producing a three-fold amplification. This allows an increase in intensity or volume for testing the ears of the deaf. This machine is in working order at the present time.

"In closing this paper I wish to cite the advantages of Meyer-Rowan machine over the Maurice from my personal observations and experience.

"The Meyer-Rowan is the only machine which conveys the blow of the same impulse as nature dictates, using all fundamental tones.

"While the vibrations produced by the Maurice machine are dissonant and do not convey the distinct sound-taps to the eardrum which can be regulated at will by the Meyer-Rowan machine.

"The practicability of treatment is indicated by the fact that every patient treated has been benefited, inasmuch as the hearing distance has increased 10 per cent to 90 per cent, and in occasional cases restored to normal.

"In cases where the patients have taken the required number of treatments I can safely state improvement in hearing has been over 50 per cent.

"The failure in obtaining results by the use of the Meyer-Rowan machine is due either to a lack of knowledge of the possibilities of the apparatus or their proper application. I have now five hundred and three detailed reports in my hands of legitimate cases from which these conclusions have been drawn which I can supply to you should you so desire, showing quite decidedly the good results produced by instrumentation and dactylization in its beneficent action in auditory re-education."

Dr. Max A. Goldstein, St. Louis, Mo., approached the subject from another physics point of view. Tyndall had said that light, heat, sound and electricity are all modifications of the same wave of motion; also, that all the special senses are modifications of the sense of touch. All the instruments for the re-education of hearing, which were simply modifications of regulated sound-producers, were but means of conveying tactile sense impressions to the ear which was temporarily impaired in some way. Whether impaired by otosclerosis or some other affection, the mechanical principle involved was not changed,—it simply meant mechanical stimulation of the auditory nerve which has been temporarily impaired. If some mechanical machinery were required for the re-education of the auditory nerve, why not go further and say that the best instrument for this purpose is the human voice? That was the principle which Urbantschitsch employed. Seventeen years ago the speaker had presented, before the American Academy of Ophthalmology and Oto-Laryngology, in St. Louis, some children who had been treated in this way. After all, it was just as much the responsibility of the otologist to perfect the method in this regard as to perfect the technic in pathology or surgery. Dr. Harris had touched upon one class of cases—those who, from otosclerosis or other disease, had become socially defunct individuals, —in which his own experience was very unsatisfactory. The result could not be maintained unless the stimulation of the auditory nerve was continued. In cases in which auditory nerve deafness had been determined, patients had taken up speech-reading, substituting the sense of sight for the auditory sense. He cited the case of a little girl of eight, who, by actual functional tests, was proved to be absolutely deaf. According to the parents, the child was born deaf, and this was borne out by the tests. Apparently the child could hear *a* and *o* at a distance of about one foot, but she could not distinguish between the letters. That child had been trained, and had reached her second year of oral work. As soon as the child had learned to correlate the relations of the spoken word to the idea or sentiment which the idea expressed, he began his education—not re-education, for she had never had any education before. She could not carry on conversation in sentences which embrace a vocabulary of about four hundred words. He cited another case of a little girl who lost her hearing from scarlet fever, also, of course, losing her speech. She was now seven years old, and following a recent attack of measles, had regained her speech and hearing. This was probably due to some stimulation to the auditory nerves furnished by the measles. He emphasized the importance of the trained otologist carrying on this work in connection with the trained, paid teacher.

Dr. Robert Clyde Lynch, New Orleans, La., had made no attempt at re-education, his experience being limited to the use of the Meyer-Rowan instrument, in a practical way, in his office, during the past three years. He had been pessimistic ever since the instrument was first brought into his office, and was frank to say that he was still uncertain. He had used it in two or three hundred cases, and had accomplished results which could not have been obtained with the ordinary Politzer bag pneumomassage. He had used it in some cases in which he failed to note improvement. According to the statements of the patients, bells and other sounds could be heard which they had not been able to hear before. Oto-sclerosis patients had not improved at all during three years of treatment, there being no appreciable increase or decrease of the deafness. Two of these patients had been through typhoid fever, one through low-grade malaria, with the chronic use of quinine (small doses over a long period), without any increase in the deafness. Some had been benefited by out-of-doors exercise. The vibrations with this instrument were passed through the Eustachian tube. The catheter was placed in the Eustachian tube so that the vibrations of air would be transmitted direct to the middle ear and membran secundaria. This sonorous tone can then be heard in a diagnostic tube. Only one vibrating drum should be used at the time. If two or three vibrations were used at the same time there would be a confusion of tones, with no resulting good. The vibrations were used through the tube for from one-half to one minute, another tone then being used for the same length of time. He had his patients come from these treatments twice a week for at least six weeks. If there was any reason, in an increase of hearing, for the continuance of the treatment, they should come for a longer time.

He had derived a great deal of pleasure out of the instrument because of the relief of tinnitus which it had afforded to many patients, some of whom avowed their willingness to be deaf if only the "noises" could be stopped. In many cases the tinnitus had stopped, or had become modified in tone or degree of intensity, the patients remaining in that condition. In some cases there was no change whatever. He did not use the to-and-fro air massage, as he believed that the vibration of the air and tone massage bear no relation to each other, except that they come from the same source. The number of vibrations producing the tone must bear a definite relation to the air starting the vibrations, and in that way they must be synchronous. If he began to note improvement in hearing in cases of supposed otosclerosis, he began to doubt his diagnosis. In cases of the catarrhal type, improvement was noted in a shorter time, with greater comfort to the patient, and the ear returned more nearly to its normal state than in other plans of treatment. The use of the instrument undoubtedly increased the patulousness of the Eustachian tube more than the use of the catheter in the ordinary way. He considered the apparatus purely a massage apparatus, having none of the principal tone variation required for re-education.

Dr. E. B. Dench, New York City, was glad to see an otologist of Dr. Harris' standing and as careful as he is, take up this matter of auditory re-education. He was familiar with the three types of instruments. The first Zünd-Bourget apparatus brought into this country was imported by a patient of his, who derived absolutely no benefit from its use. He had not used the Marage apparatus, but Lake, of London, advocated it. One of the Meyer-Rowan instruments had been tried in his clinic, with no results whatever. The firm that handled the apparatus was so convinced that it was of no use that they removed it. Undoubtedly instruments of the character of those under discussion, improperly used, could increase tinnitus.

Dr. George L. Richards, Fall River, Mass., had read Dr. Hubby's papers, and had had the instrument tried out on himself. He had asked Dr. Hubby if he was still of the opinion expressed in the two papers, to which a negative reply was given. The speaker had one of the first Meyer-Rowan instruments. Some of his patients thought they were improved by it, but he thought it largely a psychological matter. He had tried an apparatus put out by the Victor people, but without results. He was of the opinion that Dr. Miller and Dr. Goldstein were on the right line. He emphasized strongly the importance of beginning early to teach these patients lip-reading.

Dr. Harris, in closing the discussion, said his thought in bringing the subject before the Society, was to try to stimulate interest in the matter of auditory re-education. He thought he had made it plain that he was not advocating any special instrument. He was thoroughly convinced that there was a good deal in the physiology of this matter. His patients had been very carefully tested, not by subjective tests. He had had considerable improvement in cases of otosclerosis, the patient would have a cold, and the hearing would be worse. With the Zünd-Bourget instrument the requirement was that the treatments should be given twice a day, which was manifestly impossible. The human voice was ideal, but its use was impracticable, consequently some mechanical apparatus should take its place.

Final Report on the Isolation and Cultivation of the Tubercle Bacillus from the Discharging Ear in Cases of Chronic Purulent Otitis Media. Dr. Gerhard Hutchinson Cocks and Dr. James Garfield Dwyer, New York City.

Dr. Gerhard Hutchinson Cocks and Dr. James Garfield Dwyer, New York City, presented this report. Tuberculosis may effect the ear primarily or secondarily, according to their findings. Secondary aural tuberculosis may complicate pulmonary tubercle, or may result from tuberculosis of the glands, intestines, bones, etc. The acute form of tubercular otitis is characterized clinically by its rapid onset; the occurrence of multiple small perforations which quickly coalesce, forming a large defect; the rapid formation of granulations; early periotic glandular involvement; and the early appearance of facial paralysis. The chronic type is painless in its onset, protracted in course, and resistant to treatment. Extensive destruction of bone, often leading to facial paralysis, is extremely characteristic of this disease. Rarely, tubercles appearing as yellowish spots may be seen through the semi-transparent tympanic membrane.

The earlier methods employed to identify aural tuberculosis are stated, and the method reported by the writers in January, 1915, for isolating and cultivating the tubercle bacillus from discharging ears and mastoid wounds, is given in detail. This method was based upon the use of antiformin, which destroys all the common pyogenic organisms except the acid-fast group. It is assumed, from their investigations, that the cultural method is a reliable, accurate, and fairly rapid method of diagnosticating aural tuberculosis, and one which should prove of considerable value in the further study of this important subject.

Galvanic Test of the Internal Ear. Dr. George W. Mackenzie, Philadelphia, Pa.

Dr. George W. Mackenzie, Philadelphia, Pa., in this communication, holds that of the three known methods of testing the functions of the non-acoustic inner ear—the caloric, the rotational and the galvanic—the first two are applicable to the semi-circular canals only, while the last-named is applicable not only to the canals, but also to the cochlea. There is but one method of testing the eighth nerve, viz., the galvanic. The galvanic, therefore, has a wider scope of application than either of the other two methods, or than both combined.

During the eight years which have elapsed since the writer published the results of his investigations with the galvanic method, this method has been employed whenever an examination called for a test of semicircular canal function. It has been tried repeatedly when the patient was too sensitive to submit to the caloric or to the rotational tests.

After pointing out certain limitations and inaccuracies of the caloric and rotational tests, Dr. Mackenzie considers the galvanic test from the standpoint of accuracy. In making this test, certain essentials are required: (1) a suitable electrical apparatus with clean contact points; (2) even more important is an accurate milliamperemeter; (3) a reversing switch under the control of (4) a capable assistant who controls polarity, the amount of current, and observes the milliamperemeter; (5) two electrodes, one about two inches square and flat, and the other a small ball electrode (about a quarter of an inch in diameter or smaller). Both electrodes should be wrapped snugly in moist cotton or gauze. The details of making the tests are given in the paper, and the reactions described.

Among the cases examined and recorded are normals; deaf mutes; one-sided labyrinth destruction; acute and latent labyrinth suppuration; old cases of plastic labyrinthitis, unilateral and bilateral; recent as well as old cases of meningitis, some with complete and other with partial loss of function; hemorrhage into the labyrinth; fistulas of the labyrinth; internal auditory canal tumors; herpes zoster; multiple neuritis of the cranial nerves; early and late syphilis of internal ear and nerve skull fractures; gunshot wound of the ear: cases with middle ear catarrh; others with middle ear suppuration, with hyperemia of the labyrinth.

From these observations it is concluded:

(1) That the galvanic test is more accurate than the caloric or rotational tests in determining the function of the semi-circular canals.

(2) That, besides being more accurate, the galvanic test is the least annoying to the patient, the most sensitive and the easiest to control, of the labyrinthine tests.

(3) That the galvanic test can be applied as a unilateral test of the semi-circular canal function in all sorts of pathological conditions.

(4) That the galvanic test is applicable to cases of suspected unilateral labyrinth suppuration with obstruction in the external canal where the caloric may fail.

(5) That the galvanic test is a unilateral quantitative test of semicircular canal function, which is a distinct advantage over the rotational test, the latter being, at best, a bilateral test.

(6) That the galvanic test is the only one possessed for testing the function of the eighth nerve in cases of neuritis or in cases of secondary degeneration following destruction of the inner ear.

(7) That the galvanic test is the only one whereby one can make a differential diagnosis between labyrinth destruction, pure and simple, and eighth nerve neuritis.

(8) That the galvanic test is the only test available for determining the progress of eighth nerve neuritis whether favorable or unfavorable.

DISCUSSION.

Dr. E. B. Dench, New York City, used the galvanic test as a routine method of examination in all cases where there was a possibility of either an intracranial or a labyrinthine lesion. He had used it in the early years of his practice, and the literature of the subject was covered in his book. He had found from six to eight milliamperes as much as a patient could stand. The labyrinth which reacted to four milliamperes, as described by Dr. Mackenzie, was pretty close to a hyperesthetic labyrinth.

Dr. Mackenzie, in closing the discussion, emphasized that the nerve is reactive for some time after the labyrinth is destroyed, or until secondary degeneration occurs in the nerve. The Galvanic test was particularly of value in the differentiation of labyrinthine from eighth nerve lesions. In the cases of pathologic irritation of the labyrinth, a condition that always preceded a destructive lesion, the Galvanic test afforded an accurate method of determining the fact, and put one on guard, so to speak. In the care of pathologic irritative lesion, the patient had a nystagmus or a tendency to nystagmus to the affected side. The Galvanic test with the kathode to the affected side would develop a positive reaction with the slightest current. The more pronounced the irritation, naturally the less intensity of current was required. These facts he had brought out quite strongly in the paper. He was afraid Dr. Friessner did not understand the points which he had tried to bring out in the paper, for in his discussion he practically corroborated or emphasized the speaker's own arguments for the alvanic reaction, especially so where he (Dr. Friessner) mentioned the case with the destroyed labyrinth and the reactive nerve. A case with large polyps which hindered one in making the caloric test gave especial indication for the use of the Galvanic method. He recalled instances where cold water, used in excessive amounts to produce a reaction, had failed, and the Galvanic test had given clear findings, and without any distress to the patient.

In experimental work with deafmutes and in everyday private practice, he had no difficulty in getting children to submit to the examination a second and third time when they refused a second examination by turning or with cold water.

One important essential was the technic, which included a suitable apparatus, with accurate milliamperemeter, and proper electrode well soaked in water.

Concerning the reaction obtained by Dr. Dench, it was not uncommon for one in his earlier experience to first notice a reaction with six milliamperes, but the larger one's experience and the more carefully the technic was carried out, the less current was required before the reaction was noted.

He regretted that time did not permit him to answer all the questions raised in the discussion.

The Disease and Surgery of the Trifacial Nerve. Dr. John F. Barnhill, Indianapolis, Ind.

(Published in the December, 1916, issue of The Laryngoscope.*)*

DISCUSSION.

Dr. William H. Haskin, New York City, had never seen a case of neuralgia in which a cause could not be found if looked for with sufficient care, and if one knew for what to look. Medical men generally had little knowledge of the jaws and of the teeth, and of the affections which concern them. Only those who had made more or less of a fad of this sort of thing realized what a variety of conditions involve the teeth and jaws. He did not rely on the x-ray entirely. In some of the worst cases of systemic infections which he had ever seen nothing was revealed by the x-ray to suggest that the teeth were concerned in the condition. By tapping on each tooth with a metal instrument or by other means a tooth could often be found which was less sound or firm in its socket than it should be, impaction could be discovered, or perhaps supernumerary teeth could be located.

It was a significant fact that the four system of ganglia concerned—the ciliary, the spheno-palatine, the gasserian, and the otic—belonged to the posterior spinal group. Another significant point was that the ganglion of Ribes is the only single ganglion of the upper sympathetic ganglion system. Whether that had anything to do with the sympathetic eye conditions he did not know. He had a collection of 250 skulls, and he had never seen a skull in which the vidian canal, the spheno-palatine ganglion, and the foramen rotundum were so situated that one could make an injection into them. He did not believe it possible to inject the ganglion through the nose.

He had found a condition in the sphenoid sinus in some of the skulls examined which might account for pains—that is, a stalactite type of bone, with probably fifteen or twenty spicules of bone projecting into the sinus. The deeper structures of the bone were nearly always involved. Sluder had claimed that he had found this condition without any pain. The bone was always very thin, and such a condition of the bone in the floor of the sinus was very apt to affect the sympathetic nerve as it passed through the vidian canal. The nutrition of the nerve itself was disturbed. This suggested an interesting paper by Lernier, of Lyons, in 1900, in which were reported 28 long-standing and intractable cases involving the lower limbs and abdomen and the face. Seven of these facial cases were absolutely relieved of pain, and others were greatly benefited, by the removal of the superior cervical sympathetic ganglion. The cure did not take place immediately after the removal, but pain continued two or three weeks, depending upon the loss of nutrition.

Many of these neuralgic cases were infectious conditions, in the speaker's opinion, and if energy were directed to the discovery of the infective foci there would be no need for evulsion operations. The infection very frequently arose from an intestinal toxemia, from malaria, syphilis, or any anemic condition.

Dr. Joseph C. Beck, Chicago, Ill., said his experience was in keeping with that of Dr. Haskin. He also thought the ear was a causal factor in a good many cases. From a medico-legal point of view the effect upon the eye of injections into the ganglion must be considered. The effect upon the cornea was especially to be thought of, for it must be remembered that there had been a number of cases reported of absolute destruction of the cornea, either from secondary infection or from trophic changes.

With regard to the last-resort gasserian ganglion operation, he was inclined to think that injection through the foramen ovale would give as good results as the tremendous operation advocated by Cushing. He agreed with what Cushing had said at the Chicago meeting of the Clinical Congress several years ago.

The trouble was, in these cases of nerve resection, that the nerve had a tendency to jump. Murphy had endeavored to prevent this by the implantation of some substance, such as cargile membrane, which the nerve could not penetrate.

He had had perhaps 250 cases in which he had injected through the spheno-palatine formen, in some of which no relief had been obtained, while in others the method had been successful. He asked the essayist what was meant by the spheno-palatine fissure. The nerve could be reached much further back than by going through the orbital foramen. He followed the Treves method at the infra-dental foramen.

In many of these cases if one referred the patient to a dentist the patient would be referred back again with the report that nothing was the matter with the teeth. However, after the exclusion of the teeth and all other causes, in some cases pain would persist. In these cases he was inclined to believe it was "in the mind."

Dr. E. M. Holmes, Boston, Mass., following up Dr. Haskin's remarks, recalled a number of cases in which all the teeth had been removed and yet the tic douloureux persisted. He could not say that there were no cicatrices. He had had cases in which he injected ten or more times, through the infra-dental foramen, giving relief with the alcohol-carbolic solution. He had not been able to find the cause of the trouble in these cases. Patients were relieved, sometimes for weeks, months, or years, by injection in or about the ganglion. It was well to try this method after all others have failed, even when the syndrome was not that of Meckel's ganglion involvement.

Dr. Lewis A. Coffin, New York City, had had little experience with the surgery of the tri-facial nerve, but he recalled two cases showing involvement of that nerve which had come under his care. One was a young woman, referred to him by an ophthalmologist for examination of the sinuses, which he thought might be the cause of her supraorbital pain of the right side. No sinus trouble was found. She had a considerable deviation of the septum, high up, but after a thorough sub-mucous resection, she still had the pain. The adenoids were then exenterated, which in no way affected the pain; but during the handling of the case he noted that the periodicity of the attacks was quite regular. The blood was not examined, but the patient was put on a vigorous anti-malarial treatment. Improvement was prompt. The case was still under treatment, but was practically well.

The other case was that of a woman of about 45 years of age who consulted him on account of neuralgic pain about the left cheek, radiating to the ear. The patient was sure the pain came from the ear, as she was hypersensitive to all unusual or sharp noises. Treatment of the ear and anti-neuralgic treatment gave but temporary relief. The speaker was about to inject alcohol into the tri-facial when, upon examination of the urine, it appeared that there was an extremely decided reaction to tests for indican. Frequent doses of castor oil and compound licorice powder were given. Lavage of the bowel was done daily for ten days. At the end of that time both the neuralgic pain and the hypersensitiveness to noise were entirely relieved.

Dr. Harris P. Mosher, Boston, Mass., had found, from work on the cadaver, that the ideal approach to the second division of the fifth nerve was through the canine fossa. He was surprised that the essayist should go underneath the eye to reach the nerve. A number of years ago he reported a series of specimens of exostoses in the frontal and sphenoidal sinuses. He had never found more than three or four of these growing from the sphenoid, and never of sufficient size to interfere with the vidian nerve.

Dr. Barnhill, in closing the discussion, was surprised to hear Dr. Haskin say he had had no case without a discoverable cause. That had not been the experience of others. He had had cases in which the teeth were extracted, the sinuses opened, castor oil, etc., administered, and various other measures resorted to, without revealing the cause or relieving the condition, and yet he did not think the disease was mental, as had been suggested. Many of the things mentioned in the discussion were included in his paper, but not read. There were many cases, nevertheless, in which the patient would go from neurologist to dentist, from dentist to otologist, and back again, without relief from this pain, which some have declared to be so severe that they would rather die than continue with it. He had tried Dr. Mosher's method of going up through the antrum, but had not found it as satisfactory as the method which he advocated. With the same care that was exercised in other operations, the scarring would amount to nothing. Destruction of the gasserian ganglion had been tried on dogs and other animals, and it had been found very difficult of accomplishment. It could not be destroyed by injections of alcohol. The ganglion was tucked up under the dura mater, and was very difficult to reach. He reiterated that he was not discussing the class of cases which could be relieved by the various measures mentioned in the discussion, but those in which all these measures had failed to give relief. In such cases he suggested resection of the gasserian ganglion.

Ruptured Aneurysm into the Mediastinum and Deep Cervical Fascia with Symptoms of Ludwig's Angina. Report of Three Cases. Dr. Edgar M. Holmes, Boston, Mass.

(Published in the October, 1916, issue of The Laryngoscope.*)*

DISCUSSION.

Dr. L. W. Dean, Iowa City, Iowa, in opening the discussion, said: "I am sure that every one of us that has heard this very interesting report is struck by the fact that three such similar and rare cases should occur in the service of one man, however large the service may be.

"When one comes to investigate the literature of aneurysm with rupture in the mediastinum, or in the deeper fascia of the neck, one is still more impressed because of the rarity of the material on this subject.

"Osler,[1] the world authority on aneurysm, in his System of Medicine, simply states that the aneurysm may rupture in the anterior-posterior mediastinum or in the muscles of the neck. In his article on aneurysm in Allbutt's System of Medicine[2] he makes a statement that rupture in the mediastinum tissues is common. He mentions rupture into the mediastinum in both articles, but in neither does he describe the invasion of the tissues of the neck, and one gets the impression that such ruptures with invasion of the neck are not common.

"So far as I am able to ascertain, the first history of a case of aneurysm of the aorta bursting into the muscles of the neck was one reported by Lazarus Barlow[3] in the Transactions of the Pathological Society of London, in 1892. He reported a patient that suffered from difficult breathing and restlessness for several days, then finally had the sudden swelling in the neck and died choking. In this case the autopsy showed on each side of the neck among the superficial muscles a large collection of blood clot which extended behind the pharynx and compressed the esophagus. The blood had tracked up from a rupture of a saccular aneurysm of the thoracic aorta. In the report the author stated that careful search of the literature failed to reveal a similar case.

"Dr. Percy Kidd,[4] in the *British Medical Journal*, reported a case of rupture of an aneurysm of the aorta into the posterior mediastinum with compression of the esophagus and vagus nerves, which resulted in vomiting and a troublesome cough. In this case there was no swelling of the neck, the blood burrowing down into the abdominal cavity. His contention was that the vomiting was the result of compression on the vagus nerve.

"The cases as reported by Dr. Holmes, in which there was no vomiting of any moment, would suggest that the vomiting was due in Dr. Kidd's case to the hemorrhage in the abdomen rather than to compression of the vagus nerve as suggested by Dr. Kidd.

"A most interesting case of rupture of a false aneurysm of the internal carotid is reported by George Heaton,[5] in the *Birmingham Medical Review* for 1891. This case was possibly more suggestive of cervical cellulitis in the early stages.

Ten days before the patient was seen he had an attack of quinsy. Two of his sisters in the house were at the same time ill with bad throats. Three days before admission he had a profuse bleeding from his mouth and nose. There were several similar attacks. On the day before his admission some swelling was noticed in his left carotid region, which was supposed to have been an infected gland. At the time of the rupture of the carotid the patient had a mild degree of cervical adenitis. The next day the patient had a very strong pulse with a slight hemorrhage from the left ear and the nostrils. There was an ill-defined swelling on the left side of the face and neck. The left ear was pushed outwards by the swelling and the anterior meatus bulged into its cavity. The skin over the swelling was inflamed and the whole swelling pulsating synchronously with the heart beat; the left tonsil was pushed beyond the mid line; the soft palate bulging on the left side. No bruit or thrill could be detected. In about four days the patient died. Post-mortem examination showed that the patient, during the attack of tonsillitis, had developed an abscess in the neighborhood of the internal carotid artery which had eroded the wall of the artery, resulting in the production of a false aneurysm which had eventually burst."

1. Osler.—System of Medicine, Vol. IV.
2. Allbutt.—System of Medicine, Vol. VI.
3. Lazarus Barlow.—Trans. Path. Soc. of London, Vol. XLII, p. 38.
4. Brit. Med. Jour., 1886, p. 979.
5. Heaton, George.—Birmingham Med. Rev., 1891, Vol. 30, p. 304.

Dr. Holmes, in closing the discussion, added that there was no autopsy on the first case. The general surgeon who saw the man about a week before his death, thought, from the great distress about the upper chest, that there was a tumor formation and not an aneurysm. In the second case there was an autopsy, with a good report from the pathologist. Anyone seeing the patient would have thought he was dying from general sepsis. He had a slight pulsation, but not more than would come from swollen tissue. In the last case he made a blunder in diagnosis. The patient had so many of the appearances of acute septic cellulitis that it was easy to make a mistake in diagnosis.

The Vaso-Motor and Secreto-Motor Nerve Mechanism of the Nasal Chambers. A Consideration of the Anatomy and Physiology of the Olfactor Nerve. Dr. Albert F. Brubaker, Philadelphia, Pa.

Dr. Albert F. Brubaker, Philadelphia, presented this paper by invitation. The subject is discussed from the viewpoint of finding a physiologic basis, if possible, for the interpretation of the nasal phenomena that present themselves in various forms of rhinitis, a knowledge of the secretomotor and vaso-motor mechanisms that excite and regulate the secretory discharge and the vascular supply of this region, and the manner in which they in turn are excited not only to normal but to abnormal activity.

Though living, and therefore possessing the fundamental property of all living material, namely, irritability, the epithelium lining the secretory glands contained in the mucous membrane lining the nasal chambers, as well as the muscle cells entering into the formation of the walls of the arterioles, are lacking in spontaneity of action, and therefore require for the manifestation of their activities the stimulating influence of nerve impulses originating in special groups of nerve cells, and transmitted from the central nervous system by specialized groups of nerve fibers. The nerves distributed to these two structures belong to what is termed at the present time the autonomic system and hence consist of two consecutively arranged neurons, one termed post-ganglionic, the other preganglionic.

The post-ganglionic fibers that directly excite to activity the epithelium of the glands and the muscle fibers of the blood vessels have their origin in the nerve cells which constitute the spheno-palatine or Meckel's ganglion, situated in the spheno-maxillary fossa. From this origin the nerve fibers pass in different directions to become ultimately related, histologically and physiologically, with the epithelium of the glands and the muscle fibers of the blood vessels, not only of the nasal chambers, but of the roof of the mouth, palate and upper portion of the pharynx as well. The stimuli that call for the activities of these peripheral structures are nerve impulses discharged by the ganglion cells and transmitted to them by the cell process and their branches. The ganglion cells, however, though irritable, are also devoid of spontaneity of action, and require for their excitation the arrival of nerve impulses, discharged by the nerve cells in the central nervous system, and transmitted by the preganglionic fibers.

The pre-ganglionic fibers have their origin in groups of nerve cells situated in the gray matter beneath the floor of the fourth ventricle. From this origin the nerve fibers pass forward and outward, and emerge from the side of the medulla, in a small bundle, between the facial and acoustic nerves, known as the pars intermedia or nerve of Wrisberg, of which they constitute a part. Just after these nerves, in their forward course, enter the internal auditory canal, the nerve of Wrisberg enters the sheath of the facial, having but a short independent course. At the point where the facial nerve turns backward to enter the aqueduct of Fallopius, some of the fibers in the nerve of Wrisberg leave the facial and pass forward to the spheno-palatine ganglion, around the cells of which the terminal branches of the nerves arborize, thus forming histological and physiological connections with them. These fibers form the great petrossal nerve. Nerve impulses discharged by the central cells, situated in the ventricular gray, are transmitted by the nerve fibers of the nerve of Wrisberg and their continuations, to the cells of the spheno-palatine ganglion, which is then aroused to action. These, in turn, discharge impulses which, owing to the extraordinary branchings of their processes, would be distributed in a spray-like manner to the myriads of epithelial cells lining the glands and to the myriads of muscle cells found in the walls of the arterioles.

The blood vessels of this region are regulated in the degree of their contraction partly by the vaso-constrictor nerves. The pathway for the transmission of nerve impulses from the vaso-constrictor center to the blood vessels has been shown by experiment, and is described in the paper. The blood supply is under the control of two antagonistic groups of nerve centers and nerves, a dilator and a constrictor.

The central mechanism for the innervation of the nasal chambers is thus shown to consist of groups of nerve cells having secreto-motor, vaso-dilator or inhibitor, and vaso-constrictor, or augmentor, functions. Granting that they possess a certain degree of tonicity or tonus, these different groups may be excited to activity or inhibited by: (1) The arrival of nerve impulses transmitted from the mucous surfaces of the nasal chambers by the nasal and other branches of the trigeminal nerve, and from the skin by the cutaneous nerves (reflex or peripheral in origin). (2) The arrival of nerve impulses descending from the cerebrum in consequence of psychic states of an affective or emotional character (direct or cerebral in origin). These are discussed in full by the writer.

These facts taken collectively show that the physiologic conditions of the nasal chambers require for their maintenance a complex nerve mechanism; a mechanism which, however, may be easily impaired and rendered unstable by internal causes, whereupon it acts in an abnormal manner and thus lays the foundation for the development of pathologic states of longer or shorter duration.

A Contribution to the Bacteriology of the So-called Cocco-Bacillus Fetidus Ozena (Perez), with Additional Notes on the Treatment of Clinical Ozena by Means of Polyvalent Vaccins Made from the Same Organisms. Dr. Henry Horn, San Francisco, Cal.

This contribution represents work conducted by Dr. Horn and Dr. Ernst A. Victors, and follows a preliminary report previously presented. The belief is expressed that the contention of Perez, made thirteen years ago, that the cocco-bacillus fetidus ozena is the true and only cause of ozena, has not been successfully controverted. The bacteriologic work presented consisted in the more exact study of the morphologic characteristics of this organism; and an endeavor to correlate it with the bacillus bronchisepticus. Its assumed close relationship to the Friedlander group seemed to be fully settled in the negative by this work. It is believed that it has absolutely nothing to do morphologically with the bacillus of Abel or other members of the Friedlander family. The existence side by side of these two organisms in the nose is not questioned. A typical Perez bacillus and the typical bacillus of Abel and Löwenberg may be observed on the same slide. It has often been observed that as the case improves clinically the Friedlander group takes the place of the Perez bacillus and seems to be the last to clear up.

Case histories and animal experiments are detailed, and findings presented in tabulated form. Seventy-one cases were studied. In fifteen cases of simple trophic rhinitis neither the Perez bacillus nor the bacillus of Abel was once found, showing that these two organisms are not present in this type of case, nor are crusts and odor usually present. It is also shown that the bacillus is never found in the normal nose,—a point also confirmed in a large series of routine laboratory examinations. Although the Abel type is never present, other members of the Friedlander group are frequently found in accessory sinus and other infections. In forty cases the diagnosis was made of clinical ozena. In twenty-eight of these cases the Perez organism was shown to be present, or in 58 per cent. A most important fact is that in the remaining 42 per cent of cases only the Abel bacillus or members of the Friedlander group were found. In other words, in every case where a clinical diagnosis of ozena was made, one or the other of these two groups could be demonstrated as the predominating organisms.

DISCUSSION.

DR. THOMAS J. HARRIS, New York City, had used the vaccine furnished by Dr. Dwyer in about half a dozen cases, trying it very faithfully, but had failed to get results.

DR. J. A. STUCKEY, Lexington, Ky., had used some of the vaccine received from Dr. Horn, six weeks before, in four cases of ozena—not atrophic rhinitis—and in all of them had gotten good results, in two cases after the second injection, and in two after the fourth injection. How long these results would last he could not tell. He was still using the vaccine. Two of these patients had traveled all over the country seeking relief. There was now no odor at all, and the crusts were much softer and diminished greatly.

DR. GEORGE L. RICHARDS, Fall River, Mass., had used Dr. Horn's vaccine in one case, of long standing, with thick, nasty crusts in the nose and naso-pharynx. After four or five injections the crusts had diminished, and the patient expressed himself as being improved. No washing was allowed in the nose, and heavy hawking was forbidden. Experiments should be continued with any kind of vaccine which offered hope of making the lives of these patients more comfortable.

DR. ROBERT CLYDE LYNCH, New Orleans, La., had been using for two months the Parke-Davis vaccine of the Perez organism in thirty cases. Following the second injection there had been marked diminution in the odor, but this did not continue. After some period of this treatment some of the patients developed a hemorrhagic condition of the nasal mucosa, bleeding following the slightest disturbance of the crusts. This had become a decided factor in efforts to relieve these patients, and one with which he had not had to deal before using the vaccine. In no case had the scabs ceased forming, nor had the mucous membrane changed in its character. They followed the usual reaction after the first injections in some cases. It was possible to demonstrate an organism said to be that of Perez in all cases, though since hearing Dr. Horn he was quite sure there had been a mistake in bacteriological findings. Syphilis was excluded by Wassermann and lack of history and clinical manifestations. He used from 500,000,000 to 3,000,000,000 as dosage, and repeated every two to five days. Results had not been satisfactory.

Dr. Claude E. Cooper, Denver, Colo., had been studying a series of thirty-four cases, in only one of which was found the Perez bacillus or bacillus bronchiseptious. The organism was found under the periosteum. In a limited experience he had had no success with vaccine treatment in these cases.

Some Observations on the Treatment of Hay Fever, with Report of Twenty-four Cases Treated with Pollen Solutions and Twenty-two Cases Treated by the Administration of Calcium Chloride.

Dr. Harold Wilson, Detroit, Mich.

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DISCUSSION.

Dr. Seymour Oppenheimer and Dr. Mark J. Gottlieb, New York, City, in opening the discussion, said: "It is impossible with the time allotted to give this most complete paper its necessary criticism. Dr. Wilson has carefully covered the ground appertaining to the collection of pollen and the preparation of the extracts. We entirely agree with Dr. Wilson that grinding the pollen with moist sand and then macerating the mixture with aqueous solutions, and more particularly from our experience, with distilled water, the strongest antigens are obtained. We know that calcium salts have some relation to the pre-anaphylactic and anaphylactic state, and it has been the observation of many investigators, as Dr. Wilson has cited, that in some instances calcium salts prevent or diminish the intensity of the symptoms which occur upon exhibition of the substance or substances to which the individual is sensitive. On the other hand, treatment with calcium salts has not been successful in the majority of cases. Probably a combination of desensitizating methods and the administration of calcium salts will solve the problem in the cure of protein sensitizations. It is not surprising that the results obtained by Dr. Wilson from the treatment with pollen extracts have not been more satisfactory. As he himself has stated, possibly there were other pollens beside ragweed which caused the symptoms in his patients. That is only too true, as the majority of cases are anaphylactic to more than one pollen, especially of the same genus but not necessarily of the same family. In the summer and fall there are four important plants whose pollen fly in the air in such abundance that it is not surprising that there should be a multi-sensitization. These are: plantago lanceolata, which begins to bloom about the middle of July; ambrosia, which begins to bloom in the beginning or middle of August; wild astor, which begins to bloom in the early or middle part of September; and last, but not least, Indian corn, which blooms about the middle of July. Only the ambrosia and aster are of the genus compositæ; Indian corn is of the gramanesea. Certainly these are not corelated groups, and still we have found patients susceptible to one or all of these.

"Through the kindness of Dr. Wilson, we have been able, at our leisure, to study his manuscript carefully. We find that five of the cases which he treated with calcium chlorid did not react to ragweed. Of these five cases, four had none or insignificant symptoms. Ragweed was the only pollen with which they were treated, and it is fair to assume that possibly they may not have had hay-fever at all, and the result obtained may be due to conditions which we know nothing about. On the other hand, Dr. Wilson claims that it makes no difference whether the case be one of pollenosis, urticaria, eczema, asthma, or any other manifestation of anaphylaxis, as long as it is a case of sensitization the indications are clear that calcium salts should be exhibited no matter what the *causus operandi* may be.

"The individual and the season are important factors in the consideration of the intensity of the symptoms. The season may be mild or late, early or severe. The patient may be in good or impaired health. We have seen patients who in other seasons have had severe hay-fever, while in a season in which other patients suffered immensely, they suffered but little.

"Our results last year were as follows: Of 32 spring cases, 30 had no symptoms. Of 62 fall cases, 52 were treated before their attacks; 15 of these had no symptoms; of the twelve who were treated just before or during the attack, four were markedly benefited.

"At present the treatment of pollenosis and other anaphylaxes is in its evolutional stage. There will gradually be a perfection of our understanding of this complex group of conditions. With properly organized and conducted laboratory research we shall, in time, evolve something which will take its place with diphtheria antitoxin as a powerful asset in our therapeutic armamentarium. To this end we have been working for the past three years.

"This year as a result of elaborate experiments we have produced a serum-pollen extract with which we hope to increase our successes in the treatment of this troublesome malady."

Dr. George Morrison Coates, Philadelphia, Pa., said: "I have heard with great pleasure this paper of Dr. Wilson's, and Dr. Oppenheimer's discussion of it. We must recognize Dr. Oppenheimer as a master in this work from the reports he gave us last year. I think that we may all agree now that pollenosis is an anaphylactic condition against which the patient can in some cases be immunized. Babcock attempts to show that the analagous condition of so-called idiopathic asthma is also a sensitization of the body cells to one or more of a good many different forms of protein substances, and recommends, first, the tracing of the source of the infection, whether it be an animal emanation, shell fish, fruits, meats, milk, bacterial products, or what not; second, the eradication of the source of the focus of infection; and third, immunization with the proper vaccine when the condition is due to bacterial infection. Now, as this condition is surely closely akin to pollenosis, I believe that in our enthusiasm over so-called vaccine or desensitizing treatment, we must not overlook the fact that nasal abnormalities and infections must be corrected to obtain the best results. We have all of us had hay-fever cases on whom we have done submucous operations, tonsillectomies, or sinus operations, and who never thereafter had their hay-fever attacks, just as the same thing has happened in idiopathic asthma. Therefore, I would urge that we do not neglect the old tried method entirely in favor of the new and more promising ones.

"We have always understood that nasal abnormalities are one of three factors necessary for the production of the syndrome which we call hay-fever, and certainly in those obscure cases due to animal emanations, as they certainly cannot be called pollenosis, so also they cannot be treated with pollen solutions. The great difficulty with the general practitioner in rhinology as opposed to the hay-fever specialist is the almost impossibility of getting fresh pollen solutions for his work, both diagnostic and curative.

"The skin reaction, to my mind, is one of the most interesting and important features of this work. But we are told that whatever our opinion may be about the value of mixed bacterins, that the administration of mixed pollens is unwise and even harmful in that the patient may be thus sensitized to a pollen that he was not sensitive to before; this, of course, without first applying the diagnostic tests. Therefore, I presume, the mixed commercial solutions in the market should be tabooed. If the pollen solution can be marketed so as to be readily accessible for the use of our patients, it would be a great boon to many patients and many physicians, since we cannot send all our patients to Dr. Wilson and Dr. Oppenheimer, who, all honor to them, make their own pollen solutions. Other patients, of course, cannot afford the time or the money to go to another city to undertake a cure of this sort, which takes weeks to produce satisfactory immunization. This work is so valuable that it should be followed up quickly and some arrangement arrived at by which fresh pollen solutions for diagnosis and treatment can be readily shipped to physicians at a distance for the treatment of their hay-fever patients.

"Dr. Wilson's suggestion that many of the failures may be due to multiple sensitization appears to me to have considerable force. In studying his case-reports I notice that he used but two solutions,—goldenrod and ragweed, and in most cases the latter only. May not many of his failures to obtain entirely satisfactory results be due to the fact that his patients were also sensitized to some other pollens? The whole subject is too complicated at present for the average rhinologist to handle. Most of us in the cities cannot collect our own pollen and make our own solutions. Therefore, the report of the author's second series of cases with calcium chlorid is most encouraging, since his results in that are better than in those treated with pollen solutions. Why this should be, I do not pretend to offer any suggestion, for I believe that the eventual solution will be found in the pollen desensitization plus necessary surgery. Dr. Wilson is right in excluding all doubtful cases in making up his statistics. It is only by rigidly adhering to such a rule as this that the truth can be definitely arrived at. And we must remember also that in estimating the amount of improvement obtained we must in these cases be guided largely by the report of the patients and their own estimate of the benefit experienced. My own experience has been limited and I did not prepare my own solutions. My few patients reported, like many of the writers, that they were not cured, but had had about fifty per cent relief. This may have been due to less exposure than usual, a mild season, etc. No severe reactions were observed, and I see no report of such in Dr. Wilson's paper. I would like to ask on what he bases his statement that serious or fatal results may ensue. We know, of course, the danger of anaphylaxis, but is it really a serious matter here?"

Dr. B. R. Shurly, Detroit, Mich., emphasized the importance of testing the patients in order to regulate the dosage very carefully. By determining the dosage from time to time the cases would progress nicely. Of seventeen patients treated by him last summer, the majority were benefited, according to their own statements, which had to be taken in the matter, inasmuch as the patients passed from his observation. He believed, however, that there was a very strong psychic element in the treatment of hay-fever. This should be taken into consideration in studying the affection; at the same time, if patients felt that they were actually benefited by a certain line of treatment, one should be satisfied to carry out treatment along that line. He had tested some of these patients recently and had found immunity lasting a year.

Dr. Wilson, in closing the discussion, said that so-called hay-fever or pollenosis was only one aspect of sensitization in general. It was his conviction that owing to the common fact of multiple sensitization, specific pollen desensitization was more academic than practical, since it was ordinarily impossible to cover the specific sensitizations of the individual patient. Inuring calcium, other salts than the chlorid may be used. The carbonate was converted into the chlorid. Calcium lactate was agreeable to take, but more expensive than the chlorid.

Report of a Case of Cyst of the Larynx Operated Under Suspension Laryngoscopy. Dr. William B. Chamberlain, Cleveland, O.
(To be published in a subsequent issue of The Laryngoscope.)

Tubercular Mastoiditis with Sequella; Multiple Operation; Complete Recovery. Dr. William Ledlie Culbert, New York City.
(*Published in the December, 1916, issue of* The Laryngoscope.)

The Bacteriology of the Submucosa in Ozena. Dr. Claude C. Cooper, Denver, Colo.

This investigation of the bacteriology of the submucosa was suggested by an article by Dr. Jonathan Wright, published in "The Laryngoscope," June, 1913, in which the opinion was expressed that a periostitis of some unknown systemic cause is an etiologic factor in ozena. Two cultures of each case were made: The first from the surface of the mucous membrane, using a loop of the moist secretion around a crust or from under the inferior or middle turbinate, innoculated upon an agar slant. Later, in an effort to isolate the Perez cocco-bacillus, bouillon and a part of the crust was used. The second culture was made from tissue plasma underneath the mucous membrane of the inferior turbinate, as close to the bone as possible. The vestibule and inferior turbinate were cleansed with some weakly antiseptic alkaline solution; the vestibule sponged with alcohol and the turbinate anesthetized. The anterior end of the turbinate was painted with tincture of iodin and a sterile needle connected with a sterile syringe was introduced through the iodinized area to the bone. The bone was hugged by the needle while several stabs were made along the turbinate underneath the mucous membrane. The blood and plasma were then drawn into the syringe. The amount varied in quantity in different instances, from a few drops to a cubic centimeter or more. The needle and syringe were withdrawn, the needle disconnected from the syringe and the latter's contents dropped into a bouillon culture. The bacteriological findings are given in detail.

From his studies the writer concludes, among other things, that if the disease is due to some unknown systemic cause, the submucosa and periosteum should be sterile or proved to be secondarily invaded. If due to multiple microorganic causes, the seat of the pathologic changes should harbor one or more of the factors at some time during the progress of the disease. This the writer holds to be the most probable, and offered in evidence cultural proof of the existence of inflammation producing germs within the submucosa. The very frequent association of Abel's bacillus with the disease justifies considering it a quite common cause, though not the specific cause. That the Perez cocco-bacillus in view of the work of Hofer, Horn, and others, may be one of the causes and probably is, cannot be denied, but that it is the specific etiologic factor must yet be proved.

Our American Voice and Articulation. Dr. Charles P. Grayson, Philadelphia, Pa.

Dr. Charles P. Grayson, Philadelphia, Pa., draws a contrast, with the desire of making it as strikingly evident as possible that while so much has been done for the education of the deaf and the relief of those suffering from respiratory and phonatory embarrassment, practically nothing has been done of an educational nature for the cultivation of the voice or the refinement of articulation. The writer is not forgetful of the graver forms of "speech defect" that have been studied and treated with such success, but emphasizes the fact that there are many defects of lesser degree, defects that handicap the individual and try the patience of those who must listen to him. These have received but little attention, because, perhaps, the cripple himself has not cared to be cured. This is clearly the work of the oto-laryngologist. Nothing is more clearly recognized than the absolute interdependence of a sound larynx and a sound voice. Opinions may vary, however, within wide limits, as to what constitutes a sound voice. He is not one of those who seem to be content with the almost simple, uncolored fundamental tone as it comes naked from the vocal cords. "Is it too much to hope that some day we may have an American voice that will be clothed with its full complement of overtones, with all the resonance that nature intended it to have, and with a delicacy of modulation that will adapt it to every occasion?" In his opinion this is not Utopian. Vocal instruction should be introduced and made an essential part of the curriculum of every school, public or private; every child should not only be taught to use his voice correctly but should be as rigidly marked for his proficiency or his lack of it as he is for any other of his studies. Nor should this teaching be limited to the elementary schools. It should be continued with equal insistence in the high schools, the colleges and the university. By vocal instruction he did not mean singing or elocution. The child should be taught the art of ordinary speech. The earlier in life this is taught the more easily it is acquired, and with the gradual growth of the child's vocabulary, it is no less important and no more difficult to teach distinct enunciation than correct pronunciation.

As to the methods for accomplishing the protection "from the offense of slovenly and unintelligible speech," the writer was inclined to believe that more could be accomplished individually than collectively, and that each oto-laryngologist, in his own community, would exert a greater influence in promoting such a cause than could any documentary appeal issuing from the oto-laryngological bodies and addressed to the country at large.

DISCUSSION.

Dr. J. W. Jervey, Greenville, S. C., said: "In the name of Dixie I rise to protest against this wholesale indictment of the American voice. I yield to none in my allegiance to the Stars and Stripes, but just as our old friend Julius Caesar once remarked, that '*Gallia est onnis divisa in partes tres*,' even so must I at this time point out that there are three and several parts of this great country.

"Dr. Grayson speaks for the North. Sorrowfully, and so far, I agree with him. One can often recognize from afar the voice of Yankeedom. The West can speak for itself. I am here to defend the South from a broadcast and heartless attack.

"If Dr. Grayson would hear the music of cherubim and seraphim; if he could hear the lilt of a soft, sweet and soothing intonation, falling upon the listening ear, even as the fragrance of the sweet magnolia falls laden with perfumed delight upon the hungry nostril, I ask him to do that which evidently he has never done—come South. (Walking over to Dr. Grayson) Come South, sir, and hear the song of the South and perhaps a lovely woman murmuring 'I love you.' There we will welcome you, sir, and charm you with our song, even as you would charm us with your coming. Come and dispel these nightmares from your dreams. We await you!" (Applause and laughter.)

Dr. Grayson, in closing the discussion, replied to Dr. Jervey in like vein. He agreed with Dr. Curtis that instruction in correct voice production and distinct articulation would have but little effect unless the instructor combined example with precept. Dr. Curtis was no doubt perfectly right in saying that the most successful teacher for the American child would be an educated English governess possessing a clear and well modulated voice, but, unfortunately, it would probably be but a fraction of one per cent of the American fathers who could provide their children with governesses of this class. One could readily suggest any number of impossible solutions of this voice and articulation problem, but the one hastily sketched in this paper had at least the advantage of entire practicability. The means for its employment already existed. It only remained to put them into action.

The Relation of Air Pressure in the Nose to Ear Disease. Dr. John W. Durkee, Brooklyn, N. Y.

(*Published in the November, 1916, issue of* The Laryngoscope.)

Non-diabetic Acidosis with Special Reference to Post-operative Acidosis in Children. Dr. Ira Frank, Chicago, Ill.

The purpose of this paper is to bring under one head and in concrete form a review of the literature, clinical and experimental, which is fast tending to outline distinctly the hazy concept now called acidosis, adding thereto certain personal observations, and attempting to produce from the whole a practical clinical entitu, with definite etiology, definite diagnostic points, specific treatment and direct and simple prophylaxis. The type of acidosis chiefly considered is the post-operative acidosis of tonsillectomies and adenoidectomies.

That acidosis does occur more frequently following tonsil and adenoid operations is perhaps due to the fact that children are more frequently anesthetized for this purpose than for all other surgical reasons combined. Anesthesia is doubtless the most important causative factor. In addition to anesthesia, another important element possibly accounts for this relatively frequent occurrence of acidosis in children, viz., that chronically infected tonsils and adenoids *per se* may have a more or less important bearing in the production of acid bodies.

The practical points developed by the consideration of the subjects are: (1) Acetone is found in the post-operative urine of practically all children. This acetomuria produces no symptoms in a great majority of cases. (2) Varying degrees of acidosis or symptom-producing acetonemia follows anesthesia in about twenty per cent of cases in children, in individuals predisposed by chronic infections, age, etc. (3) The symptoms of acidosis are such that three degrees of severity are readily apparent, viz.: subacidosis, acidosis, and acid intoxication. (4) Acidosis may be prevented or its degree lessened by a carbohydrate diet, preceding the operation; by shortening as much as possible the starvation preparation; by the use of nitrous oxid, or a short ether anesthesia, and by the use of further carbohydrate diet as soon as the patient is in proper condition following operation. (5) post-operative acidosis in any stage readily responds to solutions of glucose, administered by mouth or per rectum, or in very severe cases intravenously, with sodium bicarbonate as a possibly valuable adjunct.

DISCUSSION.

Dr. J. M. Ingersoll, Cleveland, Ohio, said: "There are many definitions of acidosis and this fact shows that the condition is not yet well defined. Palmer and Henderson say that a condition of acidosis exists when the bicarbonate depletion of the blood has been carried to such an extent that the administration of a quantity of sodium bicarbonate equivalent to one liter or normal one-tenth per cent solution fails to diminish the urinary acidity.

"Normally the blood is slightly alkaline. We know that this is necessary to maintain life and health. During a normal existence an alkaline reserve is stored up in the body fat and muscles and this alkaline reserve is used to neutralize any tendency toward acidity in the blood.

"Volatile acids in the body are eliminated through the lungs by the blood; non-volatile acids are excreted through the kidneys and the sweat glands. An increase of active acidity or hydrogen-iron concentration in the blood stimulates the kidneys and respiratory center at first in the effort to eliminate the acid. If the effort is not successful, we get an acid intoxication, characterized clinically by rapid pulse, increased acidity of the urine, air hunger, dyspnea, stupor, delirium, vomiting, convulsions and coma.

"Many men are studying the problem of active acidity and we are all learning something about it, the things which cause it and some of the clinical symptoms which develop in acid intoxication. The paper which we have just heard calls our attention to certain definite symptoms of acidosis which may occur in our special work.

"Any condition which interferes with the normal alkaline reserve decreases the patient's resistance to acid intoxication. The debilitating effects of pathological tonsils and adenoid tissue certainly makes the patient more open to attack.

"Prolonged starvation surely predisposes to acidosis but in my judgment the short period of starvation in tonsil and adenoid operations is a very small factor in producing acidosis. The cutting off of liquids, especially water, has been proved to be a predisposing cause and this is probably a more important factor in our work than the short period of starvation. General anesthetics predispose to acidosis. Chloroform does so most markedly, ether in a lesser degree and nitrous oxid gas the least of all. Acidosis is more apt to develop after prolonged anesthesia than it is after a short period of anesthesia. Trauma and the loss of much blood makes the development of acidosis more probable. We have to deal with all these conditions in tonsil and adenoid operations. I agree with Dr. Frank in his statement that acidosis may be prevented, or its degree lessened by the carbohydrate diet before the operation; by shortening as much as possible the starvation preparation; by the use of nitrous oxid gas, followed by a short ether anesthesia. In addition to these, I would emphasize the importance of careful dissection of the tonsils to avoid trauma; dealing with hemorrhage in a plain surgical way and the giving of small quantities of water frequently as soon as possible after the operation.

"To combat the symptoms of acidosis, as Dr. Frank says, glucose should be given by the mouth or rectum, in mild cases, and normal saline solution subcutaneously in severe cases.

"We have never had a case of acidosis following a tonsil and adenoid operation in our work at Lakeside Hospital. We think the reason that we have avoided acidosis is because the patient is deprived of food and water for only a short time; an appropriate dose of morphin and atropin is given thirty minutes before the operation; the total period of anesthesia is shortened by beginning it with nitrous oxid; our dissections are done carefully to avoid trauma; hemorrhage is controlled by prompt ligation and thus depletion and vomiting are avoided; the patient is given water as soon as possible after the operation."

Dr. E. M. Holmes, Boston, Mass., cited a case which had recently come under his observation. The patient was an only child, six years old, suffering from progressive deafness, with a marked adenoid growth which had been present for some time. Dr. Dunn saw the child and gave it a clean bill of health before operation. It was suggested that a small amount of chloroform be administered, and accordingly 42 drops were given. Removal of the adenoid growth was followed by a very small amount of hemorrhage, much less than usual, and in four or five minutes the child was apparently entirely recovered from the anesthetic, without vomting or other disturbance. The operation was at about 8 o'clock; at five o'clock the child vomited. Dr. Dunn saw it within half an hour, and made the diagnosis of acidosis. The patient died the next morning, with all the signs and symptoms of acidosis. The anesthesia had lasted only five minutes.

Dr. Clifton M. Miller, Richmond, Va., had had so much trouble with acidosis after tonsillectomies, especially with the sub-acidosis group, that he had concluded that the best method of dealing with these cases was along the line suggested by Dr. Frank, and not to wait until the condition has appeared. With very young subjects he began to give water just as soon as possible, and he commenced with the alkalies as soon as water could be taken. Milk of magnesia, almost *ad libitum*, was given until there was an action from the bowels. Sodium bicarbonate was used in some cases. Since following this plan he had had no acidosis.

Dr. Robert Milligan, Pittsburgh, Pa., had recently had three very severe cases of acidosis, certain features of which were notable. In each case the length of time which elapsed before the vomiting came on was from eight to twenty-eight hours. In one case the child vomited every half hour for eight days. It lost twenty pounds during that time. This patient was a strong, well nourished boy, eight years old. The temperature rose with the onset of the vomiting, going up as high as 104.4°, and never lower than 102°. The pulse ran from 150 to 170. The abdominal tenderness was very marked, and the crying from thirst was pathetic. He tried various methods, including the use of calomel followed by milk of magnesia, but that which saved the child was intravenous injection of bicarbonate of soda. The treatment should be commenced before operation, especially in cases in which there has been much absorption from the tonsils. He had made it a rule to examine the urine in all his hospital cases, and if he found plus indican, he refused to operate. In private cases he gave glucosed candy, or glucose in other forms. Results had been better when this was done. Under no circumstances would he operate in the presence of acetone, because, with chloroform or ether anesthesia, there was always the danger of acidosis.

Dr. Joseph C. Beck, Chicago, Ill., had used bicarbonate of soda before operation ever since Dr. Lynch had recommended it to him, three years ago. He gave 30 to 60 grains in three ounces of water, by rectum, a half hour before operation. It was not practicable for him to have a urinalysis in all cases, as suggested by Dr. Milligan. He had found that vomiting had not occurred nearly so often since he had adopted this method. The occurrence of vomiting, however, should not be taken immediately to mean acidosis, as it was largely due to the swallowing of blood and mucus.

Dr. Frank, in closing the discussion, said he had never used Fisher's solution, as suggested by Dr. Fairbairn, because he had found the glucose solution with bicarbonate of soda very satisfactory.

G. Hudson Makuen

IN MEMORIAM

Dr. George Hudson Makuen died February 21, 1917, of a heart attack, at Goshen, N. Y., the home of his birth. Here began and ended the life of a useful, dignified and progressive member of the medical profession.

Dr. Makuen was born in Goshen, N. Y., July 16, 1855. He was a graduate of Yale University, of the class of 1884, received his medical degree from Jefferson Medical College in 1889, and after several years of general practice in Philadelphia entered upon the specialty of laryngology and otology. In 1897, he was elected Professor of Defects in Speech at the Polyclinic Hospital and College for Graduates in Medicine at Philadelphia.

His activities in special practice were mainly along the lines of defects in speech. In this field he gained recognition as a foremost authority. His early training as a teacher in elocution and oratory, his special practice in laryngology and dose study of the psychology of the defective child qualified him pre-eminently to the rank of leading authority in the practice and literature of this unusual specialty.

From close personal touch with our departed friend we know with what handicaps and difficulties he was confronted in urging his fellows in laryngology to study and help develop this important field in our specialty. Success in this work is only attainable by unusual patience, perseverence, careful analysis of each case and a world of sympathy. All of these attributes our friend possessed to a bountiful degree. His kind and cheerful disposition secured for him the immediate confidence of the unusual child; his fair-mindedness and logical training won the esteem of his fellows and elected him to positions of honor in their assemblies.

In 1901 he was elected chairman of the Section on Laryngology and Otology of the American Medical Association; in 1912 he was President of the American Laryngological, Rhinological and Otological Society, and in 1916 President of the American Laryngological Association.

His quiet, modest and dignified bearing were pronounced characteristics even in his more intimate associations with his professional confreres; his refined, cultured mind, his genial form of address, his carefully gleaned experiences in his special work, made him an important and influential factor in the development of laryngology. His numerous and valuable contributions to the literature of this field of medical science were like his character,—dignified, graceful, deliberate and convincing.

Laryngology has lost a strong and active worker and the particular specialty of defects in speech, has lost its most important and valuable champion. He was a good man, a kind friend, an able physician and a devoted husband.

As his many literary activities included a personal and active association on the editorial staff of THE LARYNGOSCOPE, we feel it our privilege, even though it be a sad one, to extend to Mrs. Makuen our heartfelt condolence and the sympathy of his many friends among the fellows in laryngology and otology. His scientific work will always be a stimulus to his fellows and his memory cherished.

M. A. G.

1916

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NOTE.—All titles marked with a * are abstracted under their respective numbers in the second section. All articles marked with a † have appeared as original papers in THE LARYNGOSCOPE. All articles marked with a § have been abstracted in THE LARYNGOSCOPE.

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VI. EAR.

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DIGEST OF OTO-LARYNGOLOGY.

5

Xanthosia and Other Septal Hemorrhages. CHESTER C. CATT, *Jour. A. M. A.*, Dec. 2, 1916.

As nose bleed from general causes, such as anemia, hemophilia, heart and kidney disease, is rather infrequent, they will not be considered.

The most frequent cause of septal hemorrhage is xanthosis, and occurs most often at the anterior part of the septum. At first the bleeding is slight and goes unnoticed, later becomes more profuse and may ulcerate into the septal artery. It appears as a yellowish spot and is seen as frequently on straight as deflected septums.

The treatment preferred by the author is to raise the mucous membrane and perichondrium from the cartilage and pack between the perichondrium and cartilage with iodoform gauze. The pack is left in for two days and usually does not need to be replaced. If both sides of the septum are involved, they should be done at separate times, or a perforation will result. FRANCIS R. PACKARD.

7

Deflected Septum as a Causal Factor in Sinus Disease. H. M. GODDARD, *Jour. Ophthal., Otol and Laryngol.*, Jan., 1916.

Besides emphasizing the marked deflections of the septum as of etiological importance in sinus disease the author calls attention to the more moderate types of deviation which are frequently overlooked. In these cases the patient rarely complains of nasal obstruction, yet in these very cases where the deformity is of mild grade it was found to be the principal cause of the trouble, the correction of the deviation resulting in prompt clearing up of the sinusitis. The article contains a description of the technique of the submucous operation. ED.

9

Congenital Tumors of the Septum. HARRY HAENISCH, *Zeitschr. fur Laryngol., Rhinol. und ihre Grenzgeb.*, Bd. 8, H. 3, Sept. 15, 1916.

The author describes the histological findings in a case of tumor of the septum which differed from that of fibroma, bleeding septum polypus, and of the malignant growths in that it consisted of the normal elements of the mucous membrane of the septum. He proposes the name of "appendix septi congenita" to this form of growth. ED.

10

An Investigation Into the Results of the Submucous Resection of the Septum in Children. CHARLES H. HAYTON, *Jour. Laryngol., Rhinol. and Otol.*, April, 1916.

Of 31 patients ranging in age from six to fourteen years, in 10 patients (33 per cent.) there was broadening of the nose with saddle-backs (six). In 6 patients (20 per cent) the nose was straighter and in 15 patients (47 per cent) there was no change. No perforations were discovered in the 31 cases examined. No atrophic conditions were seen. The broadening and dimpling of the nose can be accounted for by the fact that newly formed fibrous tissue has a great tendency to contract. ED.

15

Submucous Resection of the Nasal Septum. J. L. MAYBAUM, *Amer. Jour. Surg.*, Aug., 1916.

Adenoids and narrowing of the nares should receive proper operative attention in order to obtain the fullest benefits from submucous resection. The supine position of the patient, the head slightly elevated, is the ideal position while operating, as shock is eliminated and better access to the floor is obtained. Under favorable conditions packing of the nose may be dispensed with after the operation. Post-operative manipulations in the nose should be avoided for a few days to minimize the possibility of infection. Ed.

27

Adenoids as a Factor in Amblyopia. CHARLES T. ADAMS, *Jour. Maine Med. Assn.*, Dec., 1916.

The author presents twenty-six cases in which defective vision and accompanying headaches were either entirely corrected or very greatly improved after removal of the patient's adenoids. With nineteen cases reported by him in 1913 this makes a total of thirty-five cases. ED.

32

Pathogenesis of the Nasal Neuroses. C. P. GRAYSON, Trans. American Laryngol. Assn., 1916.

The author believes that at least in the majority of these cases there is an underlying neurasthenia or even a psychasthenia, of which the nasal neurosis is merely a localized manifestation. His experience has been that almost two-thirds of his cases have given a fairly clear history of inherited neurotic tendency and in almost all the others there have been perfectly evident and sufficient reasons of an emotional, mental or physical nature to fully account for that general nervous exhaustion of which the loss of vasomotor equilibrium was but a sequel and a symptom. There is, however, another group of cases the pathogenic explanation of which may be based upon the theory of anaphylactic reaction. But, he firmly believes that in a very large percentage of cases the neurasthenia primarly, and the nasal neurosis secondarily are the products of a long continued violation of diet, exercise, work and play. ED.

34

Diagnosis and Management of Vasomotor Disturbances of the Upper Air Passages. J. L. GOODALE, *Boston Med. and Surg. Jour.*, Aug. 10, 1916.

In a large proportion of vasomotor diseases of the upper air passages the disturbances are dependent upon the entrance of foreign protein into the system, either through contact, inhalation or ingestion through the mucous membrane of the respiratory or gastrointestinal tract. Foreign proteids may perhaps also develop in or upon these mucous membranes through autolysis of pathogenic or saprophytic bacteria. When the skin reactions to the various classes of pollen proteids have been determined, the management of cases will depend largely upon the relative preponderance of the local reactions in relation to the clinical history. If the cause is found to be seasonal, as in hay fever, immunization by injection of pollen extracts is likely to prove of service. Treatment must probably be repeated annually. If the cause is perennial and is due to inhalation of foreign proteins it is wiser to avoid the cause rather than to seek to effect a cure by immunization. Septic foci should be removed in order to eliminate any bacterial origin of the trouble. Ed.

35

Skin Reactions Excited by Various Bacterial Proteids in Certain Vasomotor Disturbances of the Upper Air Passages. J. L. Goodale, *Boston Med. and Surg. Jour.*, Feb. 17, 1916.

Cultures were taken from eight cases of vasomotor rhinitis and of asthma of the infectious type. The staphylococcus pyogenes aureus and albus and the pneumococcus were the organisms found. Another organism having some of the characters of the Friedlander bacillus was isolated from a case of severe asthma. Cultures were also grown from laboratory stock of micrococcus tetragenus, micrococcus cereus flavus and staphylococcus pyogenes citreus. All the cultures were grown on agar slants and then, with the object of killing the organisms without coagulating their albuminous constituents they were exposed to ether vapor for a period of four days. The colonies were then transferred to a 12 per cent dilution of alcohol in order to extract the bacterial proteids; the bacteria being one-third by volume on centrifuging that of the alcohol dilution added. After a week the fluids were tested on the skin of patients in the same manner as employed in the diagnosis of plant sensitization. A total of fifty cases of vasomotor rhinitis and of asthma were examined by the application of the staphylococcus albus, aureus and citreus, the micrococcus tetragenus and the cereus flavus.

The positive skin reaction proceeds to develop in the course of 10 or 15 minutes and ranges from a narrow band of hyperemia bordering the scratch to a hyperemic area of two centimeters in diameter. Edema occurs in the more marked cases.

The experiments showed that in certain anaphylactic individuals exhibiting symptoms of perennial vasomotor disturbances of the upper air passages an immediate and characteristic reaction is elicited by the application to a scratch of the skin of soluble extracts of staphylococcus albus, areus, citreus and micrococcus tetragenus, and also by the bacillus resembling the Friedlander bacillus. Not all patients are sensitized equally to these organisms. On the other hand, certain cases of vasomotor disturbances clinically indistinguishable from the above showed no reaction to the organisms tested. Individuals without vasomotor disturbance developed no reaction in any case. Ed.

38

Therapeutics of Hay-Fever. A. Parker Hitchens, *New York Med. Jour.*, Oct. 7, 1916.

The following plan of treatment is suggested: A thorough rhinoscopic examination. As an aid in identifying the variety of pollens inhaled by the patient a special button should be worn or kept in his vicinity, consisting of a metal frame in which is held a microscope cover glass coated with glycerine mixture used by Blackley. The microscopic examination is made after 24 hours exposure. Prophylactic treatment may be begun two or three months before the hay fever season and an initial dose of extract containing 0.0025 mg. nitrogen is sufficient to produce some immunizing response without producing any disagreeable effects. Subsequent injections are given at five to seven day intervals. The increase in dosage will depend upon the local reaction; if the redness at the point of the first injection is slight the second dose may be increased to double the original amount. No further increase is advised. Ed.

41

Hay-Fever; Its Treatment with Autogenous Vaccines and Pollen Extract.

Leon S. Medalia, *Boston Med. and Surg. Jour.*, Aug. 10, 1916.

Six cases treated with autogenous vaccines gave encouraging results. The cultures were obtained by passing a sterile swab along the floor of the nose to the posterior wall of the pharynx in such a way as to wipe off as much of the mucous lining of the passage as possible during the withdrawal, and then, implanting in the ordinary way on glucose agar, blood serum, bouillon, and blood agar. Several tubes of glucose agar slants are used, sufficient for an autovaccine. Cultures are also made from the throat by swabbing off the tonsils, going as deeply as possible between the pillars of the fauces, and from the conjunctiva by placing a swab upon it, covering it with the lids, and having the patient squeeze the lids tightly, so as to have the swab soak up any secretion present.

Ed.

51

Direct and Indirect Hay-Fever.

W. Scheppegrell, *Jour. Amer. Med. Assn.*, Sept. 16, 1916.

There are two forms of pollen causing hay fever: the one, spiculated in form and low in protein, causing direct hay fever; the other, unspiculated and high in protein causing the hay fever through absorption of the protein. The severity and duration of the attack in the direct form depend on the number of pollen grains in the atmosphere and the length of the pollen spicules (ragweeds); in the indirect form, on the amount of protein contained in the pollen and the number of pollen grains in the atmosphere (grass pollen). Ed.

53

Rag Weed Pollen in the Nasal Secretions of Hay-Fever Patients.

Dr. W. Scheppegrell, *Medical Record*, October 14, 1916.

The author reports a case in which the nasal mucus of a patient suffering from an acute attack of hay fever was collected and showed under microscopic examination an average of seven ragweed pollen to each division of the mucus examined, totalling fifty-six pollens in the secretion collected. In this instance it showed the direct relation of the pollen to the attack, the number of pollen required to cause the reaction, and the relief afforded by the discharge of the mucus containing the pollen.

M. D. Lederman.

56

Pollen Extracts and Vaccines in Hay-Fever.

S. Strouse and I. Frank, *Jour. Amer. Med Assn.*, March 4, 1916.

The pollen origin of hay fever has been demonstrated and it is difficult to reconcile good results from bacterial vaccines in a disease the symptoms of which are essentially those of pollen protein sensitization. Striking results have, however, been reported from vaccines and it is possible that bacteria may play a secondary part. The conception of hay fever as a pollinosis associated with a bacterial subinfection can be used to explain the partial relief obtained by bacterial vaccines and by pollen extracts. In the author's experiments all the autogenous vaccines were made from blood cultures on agar taken from the inside of the nose. In most instances a pure culture of the staphylococcus albus was obtained. Of thirteen cases treated by vaccines, three were cured, eight were either somewhat or greatly relieved and in two there was no change. Of sixteen cases treated by pollen extracts all were relieved, but there was no cure in any of them. Ed.

62

Sarcoma of the Nose; Report of a Fatal Case with Metastasis in the Cervical Glands and in the Brain. J. Payson Clark, *Annals Otol., Rhinol. and Laryngol.*, June, 1916.

Patient a woman, 64 years old. Tumor the size of a marble on the outer wall of the left nostril just above the vestibule. Growth removed. Two months later an enlarged gland could be felt under the left side of the jaw. This was excised and proved to be spindle-cell sarcoma which thus determined the character of the original growth. Coley's treatment tried without result for two months and at the end of that time a small recurrence was found in the nose. Complete glandular dissection of left side of the neck successfully performed. Three months later the patient developed mental symptoms, convulsive attacks, motor aphasia, dysphagia, coma. Autopsy showed three metastases in the brain. Ed.

64

Primary Nasal Polypi. Oswald Levinstein, *Zeitschr. fur Laryngol., Rhinol u. ihre Grenzgeb.*, Bd. 8, H. 1, Jan. 15, 1916.

The author describes a case of unilateral, solitary polyp of the nose in a boy seven years old and calls attention to the infrequency of nasal polypi in children. In the group of such cases collected by Avellis all the cases possessed certain characters in common; unilateral, solitary occurence, considerable size, cystic structure, absence of bleeding on removal. In all of Avellis' cases the origin of the polyp was the maxillary antrum. This seat of origin was absent in the present case. It differed also from Uffenorde's cases of primary nasal polyp in the same respect as no evidence of any involvement whatever of the antrum could be demonstrated, notwithstanding that the tumor had been of a year's standing. Ed.

67

Histological Features of Rhinophyma. Sir. William Milligan, Proc. Royal Soc. Med., Laryngol. Section, April, 1916.

Examination of the lobulated and hypertrophied tissue removed from the patent's (male, 58 years old) nose showed the surface epithelium intact and in most places not thickened at all. The main thickening occured in the subcutaneous tissue where there was considerable hypertrophy. Many of the sections showed a deposit of fat in the subcutaneous tissue. The blood vessels and lymphatics enlarged; interstitial hyperplasia; enormous dilation of the sebaceous glands to four or five times their normal size. The lobulated condition is due to thickening of the subcutaneous tissue. Ed.

69

Endothelioma of the Nasopharynx Apparently Cured by Radium. JAMES ADAM, *Jour. Laryngol., Rhinol. and Otol.*, August, 1916.

This patient, female, 36 years of age, had chronic suppuration with slight discharge in the left ear from infancy and a discharge from the right ear for nine months. The right external canal was dilated with what seemed to be a large osteoma; but this growth, though firm to touch, lacked the hardness of a bony growth and entirely filled the canal. The right choana (the patient's intonation was nasal) was found to be entirely occluded and the right half of the palate pressed downward. On pharyngoscopic examination a large mulberry-like tumor could be seen completely filing up the right half of the nasopharynx and projecting slightly to the left of the vomer. It seemed to be growing from the Eustachian orifice. Growth from the ear removed and proved to be an endothelioma. The author consequently tied 50 mg. of radium bromide screened by 1 mg. gold into the nasopharynx close to the tumor and let it remain for twenty-three hours. Within a fortnight the tumor had shrunk so much that all that could be seen of the growth was a small round mass round the Eustachian orifice; the right was free and the discharge had stopped from both ears. In about six weeks the only trace of the tumor was the thickened rounded margin of the Eustachian opening. The same amount of radium was again tied in for eleven hours. At date of the report the parts looked normal except that the tubal orifice was large and somewhat crateriform. ED.

71

Sarcoma of the Nasopharynx Treated with Radium and Mesothorium. CLINTON C. COLLIER, *Jour. Ophthal., Otol. and Laryngol.*, Oct., 1916.

Large round cell sarcoma. Patient a man 39 years old. Twenty-four exposure to 100 mg. mesothorium. No change in condition of tumor after two weeks. Twenty-four hour exposure of 150 mg. radium. Seven days later growth began to necrose. Recovery. ED.

74

Craniopharyngeal Duct Tumors. H. JACKSON, *Jour. Amer. Med. Assn.*, April 8, 1916.

The author reports a case and discusses thirty-seven cases collected from the literature. The gross pathologic characteristics of hypothysis duct tumors are typical. They are always in the median line of the base of the brain, bounded anteriorly by the optic chiasm, posteriorly by the pons, above by the floor of the third ventricle and below by the sella. They may encroach laterally on the peduncles and temporal lobes. The circle of Willis usually surrounds the tumor and the hypophysis itself may be found intact or be pressed against the floor of the sella. They usually start from the infundibulum, and the first five cranial nerves may undergo a pressure atrophy, but the olfactory nerves usually escape. The optic nerves are most seriously affected. The foramen of Monro may be occluded and cause internal hydrocephalus. The size of the tumor is usually that of a pigeon's or hen's egg; the majority are cystic. Histologically they show an embryonic connective tissue wall rich in nuclei and blood vessels and undergoing hydropic degeneration with a production of pseudocysts. In the stroma lie masses of epithelial cells sharply demarcated by a deeply staining layer of high cylindrical cells below which are many layers of ovoid or fusiform cells, with lightly staining nuclei. From a study of the thirty-eight cases in the literature, more than 70 per cent occur in early life (under 40 years), and 25 per cent over 40. The clinical courses vary. Of seventeen cases in which the symptoms were clearly stated, twelve patients showed the symptoms of the Frolich syndrome, and this, with the early disturbance of vision, should suggest a tumor of the hypophysis. The details of the clinical symptoms are given and the diagnostic signs pointed out. The active treatment is unsatisfactory. It is surgical, consisting in puncture and drainage of the cyst by a transphenoidal route. Lately the injection of the extract of the posterior lobe of the hypophysis has been used with the idea of absorbing the contents of the cyst. In the case described the patient was a man aged 18. Two operations were performed, each without permanent good results, but a third one gave some relief extending to the present time, one and a half years altogether. He has also been treated with pituitary extract by injection. Jackson concludes as follows: "1. Most cystic and solid tumors originating from the region of the infundalbulum and anterior lobe of the hypcthysis grow from embronic rests of buccal ectoderm from the craniopharyngeal duct. 2. They are the most common type of intracranial tumor associated with the Frolich syndrome. 3. Eye changes occur early. Symptoms of acromegaly are absent. Ed.

75

Nasopharyngeal Neoplasm Dispelled by Radium. A. Brown Kelly, *Jour. Laryngol., Rhinol. and Otol.*, Aug., 1916.

Patient, male, 57 years old. Nasal obstruction. Nasal fossae free, but nasopharynx largely occupied by growth attached to roof and resting on palate. Surface irregular, finely granular and red in places. Profuse hemorrhage. A packet of 50 mg. radium screened with 2 mm. silver and covered with 2 mm. rubber was drawn into nasopharynx so as to lie between the growth and soft palate and kept in this position for 24 hours. For a week afterwards patient suffered a good deal from ulceration of the palate and fauces. The radium had been applied on Jan. 27, 1915 and on March 10 it was found that the tumor had disappeared except for a small rounded mass on the roof of the naso-pharynx hanging down so as to conceal the upper half of the septum. Radium again introduced for 24 hours. May 14 no sign of growth. Last examination February 22, 1916, no sign of recurrance of neoplasm. Ed.

86

A Clinical Study of Sixty Cases of Post-Nasal Infections, with Report of Six Cases Complicated by Acute Hemorrhagic Nephritis. George E. Baxter, *Arch Pediatrics*, Oct., 1916.

The diagnosis of post-nasal infection was made from the presence of constitutional symptoms of an infectious condition with negative physical findings in all parts of the body except in the nasal passages. The symptoms in the nose varied from a mild coryza to a mucopurulent discharge from a post-nasal space into the pharynx (in 75 per cent of the cases there was also otitis media). In some cases there was adenitis of the lymphatic glands posterior to the sternomastoid muscle (these glands drain the post-nasal space) but in no case was there suppuration of the glands. In some of the cases a bloody discharge was observed through the nose and through the pharynx. The treatment was simple. The results obtained in the cases of otitis media without paracentesis were practically as good as those where a paracentesis was done, that is to say, that while paracentesis is often indicated (bulging, reddened ear drum) in the author's judgment it should not be done in every case of otitis media. In all cases the ear was irrigated with warm boric acid solution or bicarbonate of soda solution twice or three times every twenty-four hours. In no case was there a mastoid involvement. ED.

90

Anatomical Changes in the Air Passages in "Gas Asphyxiation." G BILANCIONI, *Arch. ital. di Laringol.*, Oct. 10, 1916.

This paper deals with experiments to ascertain the effects of "phosgene" (carbonyl chlorid) and bromin on the air passages of rabbits and rats. The lesions caused by asphyxiating gases are as follows: Lesions of contact caused by breach of the mucous membrane of the larynx, trachea and large bronchi, sometimes of the pulmonary alveoli and the esophagus. The membrane is in a state of necrobiosis or is badly lacerated and detached in large strips from the underlying layer. Then there is edema in the submucosa of the esophagus and in the lung where an albuminous deposit takes place in the bronchi and the larger alveoli. The most common lesion is the very intense hyperemia which by rupture of the vessels leads to the effusion of blood into the submucosa of the larynx or into the pulmonary parenchyma and thence into the bronchi. This phenomenon occurs mostly with poisoning by phosgene. The action of this gas also causes thromboses in vessels of a certain size. In rats poisoned with phosgene fragmentation occurs in some intrinsic muscles of the larynx. According to Bilancioni this is not due to dissolution of the connective tissue of the muscle cells which makes the fibers appear divided into segments, but to actual multiple ruptures of the muscle fibers. These occur irregularly, hence the fragments are unequal in length and some have lost their nuclei. The ends of the fragments are irregular and show fringes, the splitting extending along the fibers. Examination of the lesions, produced experimentally, shows that they correspond perfectly with those observed in soldiers. The laryngeal lesions, especially those of hemorrhagic character and the edamatous imbition of the lungs, are the most conspicuous features in the clinical picture and cause the most agonizing symptoms. In the upper part of the respiratory tract, especially the nasopharynx, the lesions are few or entirely wanting, partly due to the defensive reaction of these parts and partly to the shortness of the time the gas is in contact with them. ED.

94

Retronasal Angina. DR. BLUMENTHAL. *Berliner klin. Woch.*, Feb., 28, 1916.

The course of this condition is somewhat as follows: A man seemingly in excellent health is suddenly attacked with fever and headache, and is unable to refer his disagreebale sensations to any one locality.

Some patients only complain of dryness and tickling in the nasopharynx or of a somewhat stronger mucous discharge. The voice has a nasal tone. Anterior rhinoscopy shows nothing abnormal while the posterior examination may reveal a great number of changes—marked inflammation of the mucosa of the nasopharynx, especially at the vertex, with thick, tenacious, yellow-green mucus on the upper portion of the choanae. Otitis media may be a complication, but as a rule, all this subsides in a few days leaving no residues. Occasionally a renal lesion, varying from a slight transitory albuminura to a hemorrhagic nephritis may occur. In most instances the offending organism is the streptococcus. The author also calls attention to the characteristic swelling of the lymph nodes along the posterior border of the sternomastoid, as far as the mastoid process. The author reports on a number of patients in a ward of scarlet fever convalescents. Ed.

96

The Innervation of the Nasal Chambers. A. P. Brubaker, *Annals Otol., Laryngol. and Rhinol.*, Sept. 1916.

The sphenopalatine or Meckel's ganglion is no more than a sort of clearing house for nerve impulses received from the central nervous system by means of preganglionic fibers and transmitted to the glandular epithelial cells and the muscle cells of the nasal blood vessels by means of postganglionic fibers. The nerve cells of this ganglion possesses no spontaneity of action of their own, but are wholly dependent for their excitation upon nerve impulses discharged by cells of the central nervous system. As a primary condition for their activity they must possess a certain degree of tonicity, this degree of excitability being due to a reaction between the constituents of the cells and the lymph and blood by which they are surrounded. Given this tonus they may be excited to activity or inhibited either by the arrival of impulses transmitted from the surface of the nasal mucosa by the nasal and other branches of the trigeminal nerve and from the skin by the cutaneous nerves, or by the arrival of impulses descending from the cerebrum in consequence of psychic states. Whether the excitation is reflex or direct the resulting change in secretion and vascularity will be proportional to the intensity of the peripheral or the cerebral excitation and the degree of tonus possessed by the central cells themselves and the tonus of one or more of these centers may be abnormally increased or decreased by changes in their nutrition, or increased production or diminished elimination of more or less toxic products of metabolism. Ed.

103

External Nasal Deformities. Correction by Subcutaneous Method. Lee Cohen, *Jour. A. M. A.*, Dec. 2, 1916.

The author prefers the cleansing of the vestibule of the nose by removing the hairs, douching, soap and water, alcohol and ether. He thinks that iodin should not be used, and attributes infection in one case to its use. When general anesthesia is used a postnasal tampon is inserted to prevent blood from going into the throat. He makes it a rule in undermining the skin to reintroduce the instrument as seldom as possible. Author reports four cases in which deformity was corrected by undermining the skin and sawing the nasal bones at their base and holding

them in place. Iodoform packing is used, also special copper splints. First dressing allowed to stay in place for four days, then changed every 48 hours.
FRANCIS R. PACKARD.

105

Nose and Throat Complication and Sequelae of Grippe. WM. LEDLIE CULBERT, *New York Med. Jour.*, Dec. 16, 1916.

For practical purposes it may be considered that ordinary cases of grippe are manifested at first only as severe acute rhinitis, with extensive involvement of some or all of the accessory sinuses; but when the process extends, for example, into the lacrymal duct, the Eustachian tubes, the tonsils or the deeper parts of the respiratory tract, it may properly be considered as a complication or a sequel. Influenza bacilli generally obtain their first foothold in the nasal mucous membrane, giving rise to manifestations of an ordinary acute coryza, with consequent swelling of the membrane, interfering with drainage from the nasal cavity itself and the small ducts which drain and ventilate the nasal acessory sinuses, any or all of which may be attacked. The process may remain simply catarrhal in its nature until the disease is checked or run its course; but when the organisms are unduly retained in the cavities by abnormal anatomical structure of the nose they develop rapidly and the severity of the symptoms will depend upon the virulence of the organisms and the resistance of the patient. The drainage from all the inflamed area of mucous membrane follows the line of least resistance and usually flows into the nasopharynx, causing irritation and swelling of the mucous membrane, it may also give rise to infection of the tonsils, peritonsillar abscess, acute cervical adenitis, and in children even a retropharyngeal abscess.
ED.

107

Anosmia and Sellar Distension as Misleading Signs in the Localization of a Cerebral Tumor. HARVEY CUSHING, *Jour. Nervous and Mental Diseases*, Nov., 1916.

In a patient complaining of headache and failing vision and giving pronounced general pressure phenomena including anosmia and sellar distortion and choked disc the presumptive diagnosis lay between a subtentorial lesion and an interpeduncular one, though the choked disc and the absence of amenorrhea or other secondary pituitary manifestations spoke strongly against the latter. There were no convulsions, no abnormalities of sensation, no aphasia, no apraxia, no nystagmus, no paralysis of extremities, no motor twitchings. Caloric tests negative. Right subtemporal decompression was done but no tumor was found and only 2 c.c. fluid was secured. Patient subsequently died and at autopsy a large endothelioma was found on the left side, greatly displacing the hemisphere. The sella turcica showed not only a complete pressure absorption of the dorsum but a great widening of the entire space between the four clinoid processes. The olfactory tract itself was bent at an acute angle around the sharp dural edge connecting the two anterior clinoid processes and at this edge was thinned to a mere ribbon. Therefore, the anosmia was attributable to the mechanical distortion of the olfactory tracts. While anosmia and secondary distension of the sella turcica are common accompaniments of interpeduncular tumors of pituitary origin and may be signs of positive localizing value, this case tends to show that these may be misleading signs for the anosmia may be produced by mechanical injury resulting from distension of the interclinoidal space caused by pressure absorption of the pituitary fossa. Ed.

111

Smell and Taste Sensations After Intravenous Salvarsan Injections. Leo Forschheimer. *Dermatologisches Centralblatt*, No. 6, 1916.

Forschheimer has observed that within 10-12 seconds after the injection the patients stated that they smelled and tasted "ether." Ed.

113

Cessation of Vertiginous Attacks Following Intranasal Treatment. Robert Fullerton. *Glasgow Med. Jour.*, Nov., 1916.

Four cases are reported in which the vertiginous attacks ceased after removal of the nasal obstruction due to hypertrophied turbinals. What the mechanism involved is in the causation of such attacks is hard to say. To see how varied and subtle the exciting causes may be it is only necessary to mention that among other causes vertigo may be induced by anemia, rotation of the body, watching running water, tobacco smoking, or looking down from a great height. Whether the remote cause of the disturbance of co-ordination be toxic, psychical or mechanical it is not improbable that the immediate cause is one and the same in all cases. From the fact that dizziness is often associated with anemia and that pallor of the face is seen in vertigo of whatever cause, it is not unreasonable to assume that anemia of the brain structures concerned in the transmission of efferent and afferent impulses necessary to bring about co-ordination, is the immediate cause. Ed.

114

Disinfection of the Nasopharynx of Meningococcus Carriers. M. H. Gordon, *British Med. Jour.*, July 1, 1916.

1. The air of an ordinary room when brought to point of saturation by means of a steam spray containing 2 per cent chloramine acquires pronounced bactericidal properties for *staphylococcus epidermidis*. 2. Such air can be tolerated by human beings for a period varying from six to twenty minutes without marked discomfort and without harm. 3. When inhaled through the nose this air succeeds temporarily in destroying the meningococcus in the nasopharynx of carriers. Ed.

115

Disinfection of Meningococcus Carriers. M. H. Gordon and M. Flack, *British Med. Jour.*, Nov. 18, 1916.

In the case of persons whose nasopharynx yields only a few colonies of meningococcus good results follow local treatment either by direct application of a 1 per cent solution of chloramine or by subjecting them to the inhalation of a steam spray charged with zinc sulphate. In persons whose secretion from the nasopharynx yields a copious growth or a pure culture of the meningococcus best results are obtained with chloramine. Ed.

116

Cultural Requirements of the Meningococcus. M. H. GORDON, T. G. M. HINE and M. FLACK, *British Med. Jour.*, Nov. 18, 1916.

The meningococcus grows exceedingly well on a medium called trypagar. This medium is prepared as follows: Agar, 2.5 per cent is dissolved in trypsinized broth and to it is added 5 per cent of a sterilized extract of pea-flour prepared as follows: pea-flour 10 gms., salt 10 gms., distilled water 100 c.c.; steam for twenty minutes and filter. The addition of 2 per cent serum, or even better, ascitic fluid, increases the size of the colonies and the vitality of the meningococci. ED.

117

Perverse Smell Sensations After Neo-salvarsan. GRAHN, *Munchener Mediz. Woch.*, No. 5, 1916.

The author noted that immediately after injection of neo-salvarsan the patient's breath had a smell of ether and that the patient would remark about the same odor. ED.

124

Acute Purulent Infections of the Nose, Throat and Ears. Our Responsibility to the Public. HILL HASTINGS, *Jour. A. M. A.*, Dec. 2, 1916.

The idea of this article is to endeavor to educate the public in the matter of prevention of common colds, and thus avoid some of the serious complications that result. The public is unaware that 90 per cent of mastoiditis follows colds in the head, and sore throats. Proper supervision of swimming pools and the avoidance of sneezing in public conveyances, and the care of infectious nasal secretions is of great importance. Atmospheric changes such as drafts, and the lowering of bodily temperature from excessive fatigue are important etiologic factors in "colds." Plenty of fresh air in the sleeping chamber, with a daily cold bath are other important measures in the prevention of colds. Nearly all the complications of colds, i. e. sinusitis, mastoiditis, middle ear suppuration, etc., are to be treated by the method of early drainage. Many of these complications can be prevented when a cold has occurred, by avoiding the use of douches in the nose that force the infectious secretions into the Eustachian tube, by severe blowing of the nose, and avoiding swimming pools at that time. FRANCIS R. PACKARD.

129

Three Cases of Multiple Telangiectases with Epistaxis of Familial Type. R. HUTCHINSON and W. J. OLIVER, *Quarterly Jour. Med.*, Jan., 1916.

Two of the patients showed multiple telangiectases of the face with lesions on the buccal mucous membrane. All three gave a history of frequent attacks of nosebleed occurring since childhood, with a definite history of nosebleeding in other members of the family.

Case 1. Male, 49. Attacks of epistaxis as long as he could remember. Worse during the last two years, especially in the morning. Spontaneous bleeding from lips, sometimes preceded by a feeling of soreness, began eight years ago, but these had entirely ceased during the last two years. Occasional bleeding from the ears about the helix and from corner of the right eye. Occasional bleeding from the dilated superficial veins on the nose. No hemoptysis, hematuria or hematemesis of fresh blood.

He did not bleed particularly if he cut himself and bleeding from dilated vessels was easily stopped by application of cold water. Ordinary cauterization of lesions in nose and calcium lactate were without effect. Lesions successfully treated by diathermy. The second patient was the father of the first and the third patient was a son of the first. Their histories and lesions were similar to that of their relative. ED.

132

Relation of Nasal Disease to Headache. EVERETT JONES, *Jour. Ophthal., Otol. and Laryngol.*, Jan., 1916.

The following nasal conditions may be the cause of headache: Swelling of the mucosa with pressure or irritation of the nerves; direct contact of the swollen mucosa; stasis following obstruction of the drainage passages; negative pressure in the sinus; re-absorption of toxins formed within the sinus; ulceration of the mucosa with involvement of the nerves; any condition which causes active congestion of the cranial circulation.

Facial neuralgia and migraine are often due to disease within the nasal accessory sinuses. Headache in the supraorbital region with superficial tenderness is usually due to pressure from hypertrophy of the middle turbinate. Headache in acute frontal sinusitis is present from the very beginning of the disease, first over the affected sinus, later in the vertex temporal or occipital regions. In anterior ethmoid disease there is pain between the eyes; when behind the eyes and nose the posterior ethmoids may be involved. The headache in sphenoidal disease is most excruciating within the head and through the temples or occipital region. ED.

136

Treatment of Ozena and Asthma with Autogenous Vaccines. Report of Cases. C. L. KLENK, *Missouri State Med. Assn. Jour.*, May, 1916.

The vaccines, composed of a pure culture of the coccobacillus of Perez isolated from the patient's nose, have given very gratifying results. If the patient's serum from which the organism has been isolated agglutinates the bacteria obtained from the rabbit in a dilution of at least 1 to 30 the findings are positive and the organism is used in the preparation of the vaccine. ED.

138

Foreign Body in the Nose for Fifty Years. CHARLES KRUSE, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

The foreign body was a cherry pit which had been in the patient's nose since she was twelve years old. It was wedged in between the posterior end of the inferior concha and the corresponding lateral wall of the nose. There was some necrosis. Upon probing the pit fell into the epipharynx and was expectorated by the patient. The posterior part of the inferior concha was resected and the necrotic bone in the lateral nasal wall curetted. Complete healing in six weeks. ED.

139

Removal of a Large Rhinolith. D. B. KYLE, Trans American Laryngol. Assn., May, 1916.

Patient, male, 17 years old. Right nostril markedly obstructed by the septum which was deflected and perforated by pressure from a body in the left nostril. This body was extremely hard, large enough to occupy the entire naris, forcing the septum to the extreme right, and was freely movable and not attached at any point. At operation, however, it was impossible to remove it in entirety because of its size and the fact that in relation to the surrounding bony structures it was like a ball in a socket. It was removed in small fragments with the aid of a heavy rongeur forceps. Hemorrhage was considerable so that the patient was cyanotic and in shock when taken from the operating room. There were post-operative complications (pneumonia, emphysema of the cellular tissue at the root of the neck and below the clavicles, and abscess of the inner canthus of the eye) from which the patient finally recovered. Ed.

147

Atrophic Rhinitis (Ozena) and Tuberculosis. II. Tuberculin in Atrophic Rhinitis.

John Mackeith, *Jour. Laryngol., Rhinol. and Otol.*, June, 1916.

The author is of the opinion that atrophic rhinitis is a tuberculous affection. Thirteen cases, of which four suffered from pulmonary tuberculosis, were treated with tuberculin with the following results: Great improvement, 7; improvement, 3; improved, but relapsed, 2; uninfluenced by treatment, 1. The method of treatment used by the author was as follows: After the positive reaction has been obtained and all the signs and symptoms of this reaction have subsided the first therapeutic dose is given which consists of Perlsucht (bovine) tuberculin, 1:25. The injections are given in increasing doses, twice weekly, begininng in an adult with .01 c.c. Temperature is taken every four hours by the patient. This, together with the weight and general condition of the patient permitting, the dose is gradually increased until 1 c.c. of the pure undiluted P. T. O. is reached. At the completion with this course of treatment with Perlsucht-tuberculin-original, occupying about six months, treatment with Perlsucht tuberculin (P. T.) is started, the initial dose being .02 c.c., which, P. T. being fifty times as strong as P. T. O., is equivalent in strength to the last dose of P. T. O. The injections are given in ascending doses biweekly until 1 c.c. is reached. Treatment is now begun with Koch's original tuberculin, beginning with .25 c.c., practically equivalent to the last dose of P. T., and given in increasing doses until 1 c.c. O. T. is reached in the course of four or five doses. Ed.

Atrophic Rhinitis (Ozena) and Tuberculosis. II. Tuberculin in Atrophic

149

The After Effects in the Nose and Throat of the Usual Winter Cold.

Otis H. Maclay, *Illinois Med. Jour.*, July, 1916.

The important throat complication is peritonsillar abscess. The important laryngeal complication is acute laryngitis, with a possible edema supervening. The nasal complication is infection of one or more of the sinuses. The author discusses the diagnostic features of these various after effects and also the treatment which has proved of most benefit. In regard to laryngeal edema, hot foot-baths may be given and a cold pack placed around the neck. Steam inhalations should be used. Locally a spray of adrenalin, 1.30 in normal salt solution should be directed into the larynx, followed within an hour by a soothing oil spray, containing a small amount of menthol. Predisposing factors to the laryngeal involvement (sinus infections, abnormal alignment of nasal structures, diseased tonsils, etc.) should be sought for between attacks and corrected.

Ed.

150

Pituitary Tumor Treated with Pituitary Extract. V. Magnus, *Norsk Mag. for Laegevidensk.*, Oct., 1916.

This patient, 29 years old, had suffered from headache and other symptoms of pituitary tumor and for the last three months he had been blind. Some improvement followed a decompressive trephining operation and Roentgen exposures. Then pituitary extract was given systematically by subcutaneous injection and the tumor must have retrogressed to some extent as vision returned. However, although the patient's sight was considerably restored he refused further measures. Ed.

164

Neo-salvarsan in Ozenous Rhinitis. Dr. Pistre, *Rev. de Laryngol. d' Otol. et de Rhinol.*, Jan., 1916.

A case report in which the administration of neo-salvarsan proved efficacious. There was, however, a history of syphilis, but the nasal condition antedated the syphilitic infection; it was probably aggravated by the lues. Ed.

166

Rhinoplasty of the Lobe and Alae of the Nose. A. Pont, *Annali di Odontologia*, Nov., 1916.

The patient had had the lobe and most part of the alae of his nose destroyed by a howitzer explosion. The operation for the restoration of the nose consisted first, of a horse-shoe shaped incision one centimeter above the missing part in order to obtain a flap which was lowered and sutured to the cutaneous stump. The lower edge of the nostrils was thus reconstructed. The loss of substance which remained after this operation was filled up with a flap on the forehead and sewed with silk sutures to the edge of the nostrils. However, it could readily be foreseen that such a reconstituted lobe would tend to be flat rather than round and projecting like a normal lobe so that in order to correct this deficiency later Dr. Pont left the flap free from its point of junction on the forehead to the region of the loss of substance on the nose. About eleven days later the peduncle was cut, leaving the flap free upon the nose. About three weeks later, under general anesthesia, the free point of the flap, after being cut, was turned downwards and forwards so as to meet the edge of the frontal flap. The orifice of each nostril has been maintained by means of two rubber drainage tubes. The result has been perfect, esthetically and functionally. Ed.

185

Anaphylactic Action of Cereal Grain on the Respiratory Tract. J. A. Turnbull, *Boston Med. and Surg. Jour.*, Dec. 28, 1916.

In some individuals protein grains have a distinct anaphylactic reaction on the respiratory tract. These proteins may enter the system through the respiratory and gastrointestinal tracts. Boiling increases the action of the protein. High temperatures of 300 to 500 degrees F. will often destroy the anaphylactic properties of these proteins; but even after

500 degrees F. for one-half hour there remains an anaphylactic protein to which some are sensitive. Skin reactions may be obtained with wheat, barley, oats, corn and rice. Fifteen cases are reported in which respiratory troubles were caused by these grains. Ed.

189

Bacteriologic Findings in Ozena. H. C. Ward, *Jour. Infectious Dis.*, Aug., 1916.

Of 50 cases studied the results were as follows: diphtheroids, 43 cases; staphylococci, all varieties, 37 cases; b. mucosus capsulatus, 30 cases; Perez' bacillus, 22 cases; streptococci, all varieties, 20 cases; b. proteus, all varieties, 20 cases; pneumococci, 20 cases; b. pyocyaneous, 12 cases. From this variety of findings the author does not, of course, accept the bacillus of Perez as the most important etiologic factor in ozena. Ed.

200

Weakness of the Soft Palate and of the Tongue a Constant Symptom in Hemiplegia. P. de Long and T. H. Weisenburg *Jour. A. M. A.*, Nov. 18, 1916.

1. In all hemiplegics in whom there is an involvement of the lower part of the face, there is also weakness of the soft palate. This can be seen with the mouth open, with the palate at rest and in phonation. When at rest the arch of the palate is flatter and broader than that on the normal side. In phonation the soft palate on the paralyzed side appears to give way and the arch of the palate goes back and toward the normal side.

2. In hemiplegics in whom the lower part of the face is involved, the tongue on the paralyzed side loses its elasticity, and is flabby to touch and pressure. When lying in its cavity, the posterior part especially appears to be thicker and not as wide in comparison to the normal side, this being especially brought out when the tongue is protruded. Ed.

202

High Palate and Adenoids. W. Lublinski, *Berliner klin. Woch.*, Jan. 24, 1916.

In cases in which removal of adenoids fails to bring about improvement in the child's condition and he continues to breathe through his mouth the author states that examination will reveal a high, narrow palate in place of the normal, low, broad one. The higher and steeper the palate, the narrower the nose and the higher its floor so that air through such a nose enters the nasopharynx with difficulty. Hence, the removal of adenoids when present which cause so much more occlusion of the nasopharynx will not entirely remedy the condition. Ed.

226

Tonsillar Endamebiasis and Thyroid Disturbances. J. S. Evans, W. S. Middleton and A. J. Smith, *Amer. Jour. Med. Sciences*, Feb., 1916.

The study is based on 362 goiter cases. Tonsillar lesions of an infective cryptic character were found in 22.8 per cent and nasal together with tonsillar lesions existed in 90 per cent. Analysis of these results shows primarily an extremely high proportion of positive findings of endamebae in the tonsillar crypts in goiter subjects having, as is frequently the case, chronic hypertrophic tonsillitis; and secondarily the frequent coincidence under treatment with emetin hydrochloride of (a) disappearance of the amebae (with amelioration of the tonsillitis) and (b) of reduction in the size of the goiter and improvement in, or disappearance of, nervous and circulatory symptoms of dysthyroidism, directs attention to the question of reduction in the goiter mass. The authors do not believe that this effect (which was uniformly maintained over a period of a number of months) could be attributed to such a transitory action as vascular constriction from vasomotor influence. They believe that the reduction in the size of the goiter as well as the improvement in the dysthyroidic symptoms is the result of the removal by emetin of the amebae in the tonsillar crypts in these cases, this resulting in a breaking of an important symbiotic chain of endamebae and thyrotoxic bacteria and thereby removing from these foci the active elaboration of the directly influential toxins. Ed.

242

A Study of the Physico-mechanical Function of the Faucial Tonsil.

Elmer I. Kenyon and W. T. Kradwell, *Annals Otol., Rhinol. and Laryngol.*, Dec., 1916.

Their investigations lead the authors to the following summary and conclusions: 1. The tonsil serves as an absolutely necessary factor in providing a channel for the action of the palatoglossus muscle. 2. The function of the tonsil with reference to the palatoglossus is to afford support and protection to the normal action of this muscle. 3. Tonsillectomy serves to destroy not merely a possible lymphatic function of the tonsil but also to disturb or destroy an important physico-mechanical function. 4. More or less impairment of action of the depressor palatal muscles must occur in practically all cases following tonsillectomy, regardless of the delicacy of operative technique or method. Ed.

250

The Occurrence of Abscess in the Lung After Tonsillectomy; Report of Nine Cases in Adults.

Morris Manges, *American Jour. Surg.*, March, 1916.

The author states that there is every reason to believe that post-tonsillectomy lung abscesses are much more frequent than the published cases would lead one to suppose. The nine cases reported by Dr. Manges occurred at Mt. Sinai Hospital, New York, and were all operated on by very competent men. The cause of these abscesses is probably aspiration of blood or tonsillar tissue at the time of operation. A second possible cause might be embolism from the open veins or from a septic thrombus in or near the field of operation. This embolic origin, the author states, is not very probable because such embolic abscesses always involve many areas in the lungs. The anesthesia itself is not a cause of lung abscess as bronchitis or pneumonia are the only lung complications after anesthesia. The author believes that the occurrence of lung abscess may be prevented by due care before, during and after the operation and that this complication never occurs in private patients. The latter statement is certainly fallacious as cases have occurred in private patients. Ed.

252

Tonsillectomy. J. Matthews, *Jour. Amer. Med. Assn.*. Feb. 12, 1916.

The author describes the method of tonsillectomy as used in the Mayo Clinic. The instruments used are a syringe with extension barrel and curved needle, the Robertson knife, Richards' forceps and Tyding's snare. The tonsils and their immediate vicinity are brushed with cocain, 10 per cent, and this is repeated in five minutes. After a like interval, a solution of cocain, 0.25 per cent, with one minim epinephrin per dram, is injected into the connective tissue about the capsule. When the patient pales from the effect of this the operation is begun. The tongue is depressed till the edge of the palatoglossus is prominent in the anterior pillar; just behind this pillar there appears a triangular depression whose other side is the tonsillar portion of the plica triangularis, and whose base is the root of the tongue. The point of the knife is placed in this depression and swept upward so as to cut the mucous membrane and enter the deeper tissues between the capsule and the anterior pillar. The incision is continued upward until the superior pole of the tonsil is reached. When the knife is turned slightly and brought down between the capsule and the posterior pillar. During the incision the tissues are not fixed by the forceps, the knife following accurately the line of least resistance. The cut is usually sufficient to free the superior pole so that it may be drawn inward and downward with the forceps. The capsule being put under tension, the fascia and muscle are pushed away from it with the flat surface of the knife. The process is continued till the whole surface of the capsule, including the insertion of the superior constrictor muscle, has been freed so that the tonsil is attached only at the lower aspect of the inferior pole. Then the snare is passed over the forceps and tonsil so that the free end of the loop engages the remaining attachment and the lymphoid tissue of the mucous membrane folds below it. This lymphoid tissue should be carefully removed, as it often contains crypts which may produce general infection. The blood vessels necessarily severed in this method are smaller than those in the fascia, which might be injured by a sharp instrument, but by the method described the flat surface of the knife is used and unnecessary hemorrhage usually avoided. Ed.

255

Pyelocystitis and Metastatic Abscess Following Tonsillitis. H. B. Mills and G. A. Sowell, *New York Med. Jour.*, April 15, 1916.

The authors report a very interesting case of pyelocystitis and metastatic abscess of the left foot and left hand following an attack of tonsillitis. Pus from the abscesses showed a pure culture of staphylococcus albus. Blood culture also showed staphylococcus albus. Ed.

260

The Dangers and Complications of Tonsillectomy. S. E. Moore, *Medical Record*, Dec. 2, 1916.

In a very instructive and exhaustive paper upon this important subject, the author decries the note of enthusiasm which in its intensity temporarily overlooks the dangers and disadvantages incident to the method for the removal of the tonsils which is so popular at present. His personal interest was drawn to the dangers and complications of the operation in a patient who four days after having the tonsils enucleated with the Sluder-Ballenger instrument, suffered an attack of neuritis which became widespread, involving the nerves of the thighs, back, both forearms and arms, neck, feet and chest. He was forced to go to bed where he remained up to the time of the author's paper, seven months after the surgical treatment. The tonsils were successfully and completely removed under local anesthesia. The patient had had but one attack of tonsillitis in thirty years. Under microscopical examination, the removed tonsils showed no areas that could be interpreted as infective foci, and only a small amount of tonsillar tissue existed. The patient had suffered from an attack of polyneuritis five or six years previously, resulting from acute arsenical poisoning, but a complete recovery following a mild recurrence suggested the removal of the tonsils. The author has considered the subject in a very thorough manner, and his conclusions should be read with thoughtful consideration. His paper is a valuable contribution to the subject, and should be read and digested by many of our colleagues. M. D. LEDERMAN.

272

Tonsillectomies in Poliomyelitis. J. C. ROPER, *Long Island Med. Jour.*, Nov., 1916.

The author calls attention to the finding in the recent poliomyelitis epidemic in New York of a considerable group of cases in which there were localized foci of pus in the tonsils from which the typical organisms could be isolated. In these cases the progress of the disease seemed to be slow, with more or less fever, and at times late development of paralysis. On the strength of these findings the tonsils were removed from a group of cases not during the acute stage, but after the third week. Several of the patients thus operated on showed marked benefit.

ED.

273

Etiology of Epidemic Poliomyelitis. E. C. ROSENOW, E. B. TOWNE and G. W. WHEELER, *Jour. A. M. A.*, Oct. 21, 1916.

The authors report the results of their bacteriological studies of throats, tonsils, blood, spinal fluid, central nervous system and other tissues in cases of acute poliomyelitis during the epidemic in Rochester, Minn., and in New York City. They isolated a peculiar polymorphous streptococcus, often in large numbers, from the throat, from material expressed from tonsils and from abscesses in tonsils of a large series of cases of epidemic poliomyelitis. In twelve consecutive cases they obtained the same organism from the brain and cord and the intervertebral ganglia, and in some of the cases, from the lymph nodes also. One of the striking characteristics of this organism is that with changes in its artificial medium it becomes transformed from a relatively large coccus to an extremely minute organism resembling the globoid bodies described by Flexner and Noguchi. Paralysis with lesions in the central nervous system has been produced in guinea-pigs, rabbits, dogs, cats and monkeys by intravenous or intracerebral injection, with this streptococcus from practically all of the 52 cases of acute poliomyelitis. Furthermore, it has been produced by injecting the emulsions of pus expressed from tonsils, emulsions of extirpated tonsils and emulsions of the brain, and also by injection of the pure cultures from the throats, from material expressed from tonsils and from abscesses in tonsils removed from living patients and necropsy cases. Ed.

276

The Question of Age in Tonsillectomy. Thomas L. Shearer, *Jour. Ophthalmol., Otol. and Laryngol.*, March, 1916.

The aúthor offers the following suggestions: (1) If constitutional and other treatment can successfully maintain a fair condition of health in a child tonsillectomy should not be performed under the age of at least eight years. (2) Between the ages of eight and fourteen years if one can obtain positive evidence of local or systemic injury from the tonsils and if the tonsils do not yield to conservative treatment, enucleation should be carried out. (3) Not infrequently the removal of adenoids may afford such relief to the child as to obviate any immediate necessity for tonsillectomy. (4) Adenoids should not be removed in infants unless the child is unable to nurse on account of the nasal obstruction. (5) It should be made a routine practice in every child suffering from enlarged cervical glands that the teeth, peridontal spaces, adenoid region and nasal cavities be thoroughly explored before accusing the faucial tonsil of being the host of the infection. Ed.

284

Epidemic of Severe Form of Acute Infection of the Throat with Abscess Formation. Report of 58 Operations. C. F. Theisen, Trans. American Laryngological Assn., 1916.

The author's report deals with a total of 384 cases, fifty-eight of which required surgical measures. Forty-four were cases of peritonsillar abscess (38 unilateral, 6 bilateral) and of the remaining fourteen in eight the abscess developed in the lateral columns of the pharynx; two cases of infection of the epiglottis with great edema and some pus; two cases of abscess of the lingual tonsil and two cases of retropharyngeal abscess (the latter in children). In this series of fourteen cases there were no enlarged tonsils in ten cases, and in the other four healthy looking tonsils with no deep crypts. The author endorses Semon's opinion that "the various forms of acute septic inflammation of the throat and neck, hitherto considered as so many essentially different diseases, are in reality pathologically identical; that they merely represent degrees varying in virulence of one and the same process." In operating for peritonsillar abscess recommends dissection backwards until the capsule is reached and removing the upper lobe of the tonsil, thus leaving a large triangular opening for drainage. Patients so operated have done much better and recovered more quickly than those treated by the usual incisions. Ed.

289

The Faucial Tonsils in Singers. Should We Remove Them? Irving W. Voorhees, *New York Med. Jour.*, Dec. 16, 1916.

The author's conclusions are as follows:

1. An analysis of 5,000 tonsil operations in singers shows that in the hands of skilled operators there need be no special fear of bad results.

2. It is the concensus that bad results are most often due to cicatricial contractions occurring from careless dissection or from neglected after-treatment.

3. Pain in the tonsillar region, neck, and larynx, is probably due to section of some of the larger branches of the glossopharyngeal nerve (Justus Matthews).

4. Loss of singing voice after tonsillectomy might be due to a nerve lesion, but is probably due to adhesions and cicatricial formations in the fauces.

5. Loss of singing voice occurs very rarely after tonsillectomy. Impaired voice is possible, but most cases show an increased range of from one-half to a full tone.

6. The singer's problem is a very special one, and no larynologist should undertake to operate on these patients unless he has some knowledge of the art of singing.

7. At operation the greatest care and skill must be exercised in securing a clean, free dissection. Injury to the tissues surrounding the tonsil may prove disastrous.

8. Postoperative care is of special importance. The patient should be seen daily until full healing occurs. Ed.

291

Lung Suppuration After Tonsillectomy. H. Wessler, *Interstate Med. Jour.*, *Roentgenology Supplement*, Jan., 1916.

Wessler observed 28 cases of lung suppuration from all causes during the past year. Eight of these cases followed tonsillectomy. In six of the eight the right lung was affected. Six cases were cured spontaneously; in one an excision of the affected lobe had to be done; the other was unimproved. Ed.

295

Cylindroma of the Tongue. R. H. Baker, *Surg., Gyn. and Obst.*, Sept., 1916.

True cylindroma may be classified as an endothelioma cylindromatosum or angioma cylindromatosum, because the clinical history of such tumors combined with their microscopical structure tends to the view that the cylindroma is a tumor of endothelial origin. It is slow in growth, with frequent recurrences but lacking in metastasis. The two cases reported by the author are unique in their origin in the tongue. The conclusions to be drawn from these cases are: 1. That they arise from abnormal proliferation of blood and lymph capillaries and spaces. 2. That the endothelial lining of these capillaries and spaces gives rise to a secretion of some material with the staining reaction of connective tissue hyaline. 3. The hyaline substance may be distributed centrally or peripherally to the secreting cells. 4. The excessive proliferation of the vascular elements meeting the resistance of the firmer connective tissue framework and the increasing resistance of the hyaline material tends to assume a twisted convoluted structure. 5. The increasing tension within these convolutions from proliferation and excessive hyaline formation causes an impaired vascular supply to the tissue and ultimate necrosis of the endothelial cells and tends also to restrict the nutrition of the connective elements, with resulting sclerosis and hyaline degeneration. Ed.

297

Tuberculosis of the Tongue. LUIGI DURANTE, *Annals Surgery*, Feb., 1916.

In the majority of cases tuberculosis of the tongue has a localization secondary to a tuberculous process in other parts of the organism. The anatomical forms which tuberculosis of the tongue may assume do not represent any distinct anatomical entity. But whatever be the final anatomico-clinical form the beginning is always characterized by specific connective tissue, new formation of tuberculous nodules, which may be localized separately in the dermis of the mucosa or in the lingual parenchyma. From this distinct initial localization of the tuberculous process may originate two clinically different types (1) as a grey plaque (somewhat like cutaneous lupus) elevated above the surrounding mucosa without inflammatory reaction, and hard to the touch; if these preserve the sclerotic form they are spoken of as *glossodermatitis tuberculo fibrosa*, and if they ulcerate, *glossodermatitis tuberculo-ulcerosa*. (2) As a nodular, confluent, or disseminated miliary tuberculosis. Diagnosis must depend largely upon microscopic examination of the excised tissue, for from the clinical characteristics lingual tuberculosis has frequently been confused with epithelioma and tertiary syphilis. The nodular form of intralingual tuberculosis, confluent or disseminated, is, in the early stages, quiet, not accompanied by enlargement of regional glands, without pain and is simulated most frequently by gumma. These, it should be noted have a predilection for the base of the tongue while tuberculosis elects the lip. The differentiation of tubercular ulcer from cancerous ulcer must depend very largely upon histobiologic examination because the clinical differential characteristics may be very confusing. ED.

299

Cancer of the Mouth and Tongue, with Special Reference to Metastases in the Neck. J. SHELTON HORSLEY, *Southern Med. Jour.*, June, 1916.

The paper is based on a series of eight cases of cancer involving the tongue or mucous membrane of the mouth. In one of these cases the point of origin seemed to be just beneath the mucous membrane in what was probably a dermoid growth in the submaxillary gland. In recurrent cases about the mouth and floor of the mouth where block dissection seemed to give but little hope, the Percy cautery was used. The results were very striking. Where the tissues are dense, the Percy cautery should first be applied for ten minutes, the tissue excised and the cautery again applied for at least thirty minutes to the raw surface left by the excision. In the selective zone which lies outside of the region of actual necrosis, cancer cells are destroyed by a degree of heat of about 115 degrees F., if maintained for twenty minutes, which will not destroy cells of normal tissue. Besides its actual destructive effect, the Percy cautery has the advantage of sealing the capillaries and of destroying cancer cells in a zone where normal cells are not affected. These destroyed cells may have the additional advantage of acting as an autogenous vaccine. Of Dr. Horsley's eight cases, three were (in November, 1916) in good health and without any signs of recurrence for periods of thirteen months, three years, and three years and three months, respectively. A fourth patient who is living had a recurrence for which he was operated upon and was (at the time of Dr. Horsley's writing) doing well and with some chance for permanent recovery. ED.

306

Abscess of the Tongue. J. Penn, *Boston Med. and Surg. Jour.*, Feb. 3, 1916.

Abscess of the tongue is rather a rare condition because of the vascularity of that organ. In making a diagnosis a number of factors should be taken into consideration. (1) A very early symptom is sore throat; (2) there is steadily increasing pain with its characteristic distribution to the tongue, neck, ear and temporal region; (3) temperature and flushing of the face; (4) enlargement of the tongue, difficulty in swallowing, opening the mouth and in articulation; (5) fluctuation cannot be made out; (6) the submaxillary glands are swollen and tender. Ed.

309

Tuberculosis of the Tongue. J. R. Scott, *American Jour. Med. Sciences*, Sept., 1916.

The author has been able to collect 231 cases of tuberculosis of the tongue. The majority of the cases show the age of occurrence to be from forty to fifty years (the earliest reported age was 5½ years) and that males are more frequently affected than females. As regards etiology the author classifies the disease into primary and secondary forms, the secondary being more common, and that trauma is a very important factor especially in a patient suffering from pulmonary tuberculosis. The tissue may be directly inoculated by contact with bacilli laden sputum. However, in addition to direct inoculation, the infection may be carried to the part either by the blood or lymph streams. In his series of collected cases he was able to find only 26 undoubted cases of primary tuberculosis of the tongue. Tubercular ulcerations of the tongue are very indolent in their progress and quite resistant to treatment. In appearance the lesion is small, round, slightly elevated. The form of the nodules is frequently elevated, either round or oval, or irregular. They rapidly break down in the center and form ulcerated areas whose walls are generally abrupt and frequently undermined.

The differential diagnosis is often a matter of considerable difficulty; it should be made only after a microscopical examination of the material from the lesion. Simple ulcers of the tongue, local manifestations of syphilis and carcinoma, must be considered where microscopical differentiation is very difficult. A special staining method for demonstrating tubercle bacilli should be used, or a piece of tissue may be injected into a guinea pig.

The prognosis is dependent upon many factors aside from simple ulceration of the tongue. If taken in the earlier stages, and the patient is not suffering from pulmonary tuberculosis in the advanced stage, surgical removal of the diseased tissue of the tongue has resulted in an apparent cure; in other cases, the prognosis is very bad. According to von Ruck, however, when tuberculin is administered, the prognosis becomes fair.

At the present time, the majority of medical men use surgical treatment; where the lesion occupies the anterior portion of the tongue, it is now the practice to remove a V-shaped piece, going far beyond the limits of the actual lesion. Where the greater part of the tissue of the tongue is affected, it becomes necessary to amputate. Simple curettement is not advisable; the actual cautery is a better method of local conservative treatment. Ed.

312

Glossopharyngeal Paralysis. MAURICE VERNET, *Paris Medical*, Dec. 23, 1916.

In glossopharyngeal paralysis there is difficulty in swallowing solid food because the superior constrictor muscle of the pharynx is innervated by this nerve. Another feature of paralysis of the superior constrictor is a curtain movement of the posterior wall of the pharynx from the affected side towards the sound side and there is disturbance in the sense of taste of the posterior portion of the tongue. ED.

326

Alveolar Necrosis. LUIGI ARNONE, *Annali di Odontologia*, Nov., 1916.

The author speaks of the difference between acute and chronic necrosis; while the former manifests itself with alarming symptoms and requires prompt and energetic treatment, the chronic alveolar necrosis generally does not give any pain and manifests itself when the sequestrum is already detached. This fact can be explained by the difference in the pathological process. The principal forms of aveolar necrosis are three: acute infective necrosis, syphilitic or tertiary necrosis, and distrophic necrosis, which always occurs in conjunction with injuries of the nerve. In acute infective necrosis the suppuration begins in the external side of the periosteum and advances inwardly. By the force of gravity and probably also because some little abscesses open on the internal side of the periosteum, the pus reaches the medullar substance, where the process becomes still more active and develops exclusively in the cells. The osteoblasts, being irritated, assume the function of osteoclasts and secrete a substance of acid reaction, which softens and destroys the lamellae of the bone, producing gradually a boundary line between the sound and diseased tissue. The relatively large size which sometimes the sequestrum reaches, can be explained by the spreading of the septic process about the walls of the nutritive arterioles, their consecutive obstruction, and consequently the lack of nutrition of a region of bone.

The syphilitic or tertiary necrosis begins on the contrary with an arteritis. Gradually the vessel is occluded, the dependent region is no more nourished and the bone falls in necrosis; but the whole process has a very slow course and does not cause any pain. When the sequestrum is detached, the presence of a prominent point, which hurts the soft tissue can be noticed, or if the patient wears a dental plate he can feel it unusually loose. The neuralgic necrosis occurs after a very rebellious neuralgia of the trigeminal branches. In such cases very large sequestrum may become detached, without causing any pain and followed by prompt recovery of the gum.

The author suggests that in cases of fistulae of the gum of very slow course, with fever and other severe symptoms, it is to be thought that the process may have reached, besides the periosteum, also the bone, causing the detachment of some sequestra. ED.

334

Displacement of Fragments in Unilateral Mandibular Fractures with Loss of Substance. A. BERETTA, *Annali di Odontologia*, Nov., 1916.

From observations covering numerous cases of lateral mandibular fractures with loss of substance the author has found that the longer fragment is pulled backward and downward and is projected laterally toward the region of the fracture. The smaller fragment, on the contrary, is pulled forward, upward and toward the median line, it is never situated outside the greater fragment but always on its lingual side. Ed.

335

Injuries of the Jaw Bones Caused by War. G. Bersani, *Annali di Odontologia*, Nov., 1916.

The author points out that the dentist should co-operate with the surgeon in the treatment of these injuries. To prevent infection the author employs irrigations of physiological salt solution. He advises to keep in place the bony fragments and the teeth, even if they are very loose, provided that they are not completely detached, because most of them can again become attached and firm. The wounds of the soft parts are not to be sutured but simply treated with aseptic dry dressing. Wounds of the upper jaw are always less severe than those of the mandible and their treatment is easier even if they are complicated with injuries of the antrum. In the treatment of jaw fractures it is of capital importance that fragments be replaced in normal position and this is obtained by placing the remaining teeth in normal occlusion. Constriction of jaws often occurs in cases of injuries of the mandible; it can be prevented or treated by active movements of the mandible and frequent massage. Ligature of fragments for retention is not advised by the author. Interdental metallic ligatures have been employed by him only in cases with displacement of fragments. Ed.

339

Treatment of Tuberculous Adenitis by Roentgen Rays. R. H. Boggs, *New York Med. Jour.*, May 27, 1916.

Operation is followed by frequent recurrence and there is great danger of producing general tuberculosis. The end results of radiotherapy are much better. The same massive radiation is not indicated in tuberculous adenitis as in malignant disease. Roentgenization is the best method of treatment when the glands have become widely scattered and are broken down and where there is pulmonary involvement the author believes that the Roentgen ray together with hygienic treatment is the only method to be taken into consideration. Ed.

340

Treatment of Leukoplakia by Radium. Russel H. Boggs, *Texas Med. Jour.*, Nov., 1916.

Without denying the great frequency of tertiary syphilis of the month and its possible transformation into cancer, there is no question of the existence of non-syphilitic leukoplakia, chronic from the outset, followed by epitheliomatous degeneration. It differs from the syphilitic lesion. Syphilitic leukoplakia is accompanied by induration, fissures and later scarring and white fibrous tracts and the diagnosis may be confirmed by the Wassermann. The results of the radium treatment have been so satisfactory in the author's experience that he is treating with this method all cases of idiopathic leukoplakia as well as some cases of syphilitic leukoplakia. The latter have not responded so well as the former but even in the luetic tybe better results are obtained than with any other form of treatment. The author believes that in many instances we have an epithelioma situated in luetic tissue which will not respond to one form of treatment alone. In the treatment of leukoplakia the best results are obtained by the rays of slow penetration as it is necessary to have a reaction deeper than one or two millimeters. Using a tube containing 25 milligrams of radium an exposure of one to two hours is usually sufficient for each lesion, depending upon its stage and extent. On the tongue, on account of the papillae, a somewhat larger dose is required than on the buccal mucous membrane. As a filter the author uses one-half millimeter of silver, several layers of gauze and a finger cot. This allows a large amount of the Beta rays to be used in the treatment. Ed.

349

Primary Syphilis of the Gums. Achille Breda. *Giorn. ital. delle Mal. ven. e delle Pelle, Jan.*, 1916.

Breda records three cases where primary sores occurred on the gums. As that situation is rarer on the lips and tongue, he gives a full report of the differential diagnosis. The sore was situated on the anterior aspect of the gums, painless, of rapid growth, and accompanied by the usual glandular enlargement and subsequent rash.,The object in reporting the cases is to draw attention to the differential diagnosis. It has to be distinguished from a swelling due to periostitis of the bone from injury, erectile tumors, cystic growths, osteoma, enchondroma, carcinoma, sarcoma, and fibroma. The accompanying enlargement of glands also leads to confusion with new growths. The syphilitic lesion can be diagnosed by its history of short duration, and the fact that it is localized to the mucous membrane. It occurs more on the anterior than the posterior surface of the gum opposite the front teeth. It is not usually large, is sharply defined, and of semilunar outline. Elevated, pedunculated, lobulated, or massive swellings are not likely to be syphilitic. Ed.

355

Entameba Buccalis. A. Chiavaro. *Annali di Odontologia*, Sept., 1916.

The author publishes the results of his researches upon the *entameba buccalis* and points out that the entameba described by Prowazek is probably identical with *ameba gingivalis* of Gross (1849), with the *entameba buccalis* of Steinberg (1862), the *ameba dentalis* of Grassi (1879) and the ameba found by Flexner in a mandibular abscess and described in 1892. The fact that these investigators never found the *entameba buccalis* in a state of encystment left the suspicion that it was not an independent form but rather a stage of development of some of the entamebae, which are found as intestinal parasites. The author's researches were directed to studying the morphologic characters of the *entameba buccalis*, deducting therefrom as to the independent form of the entameba, to observing the relationship between the presence of the entameba and the conditions of the oral cavity and solving the question of its pathogenicity. His conclusions, based on a study of 68 cases, are: (1) the *entameba buccalis* is an independent form; (2) it is found in every case of alveolodental pyorrhea and generally in soft deposits of teeth, sound or not, which are kept in good hygienic condition; (3) it is absent in dental cavities in which the pathological process of decay is actually going on, and therefore represents an acid medium, and it is also present in hard tartar; (4) the *entameba buccalis* has no pathogenic action; on the contrary, as it feeds on bacteria, it is probably an adjuvant in the auto-disinfection of the mouth. Ed.

373

Treatment of Vincents' Angina and Stomatitis with Silver Nitrate and Methylene Blue. M. Favre and H. Dreyfouss, *Presse med.*, No. 61, Nov. 2, 1916.

Although the treatment with organic arsenical preparations such as neosalvarsan and galyl is recognized as specific the authors find a combination of silver nitrate and methylene blue treatment equally efficacious. The ulcerations are very carefully cleansed every day with swabs of cotton previously dipped in a 10 per cent silver nitrate solution. Especially the bases of the ulcers must be made clean. The silver nitrate is then followed by the free application of a one per cent methylene blue solution. Disappearance of the more superficial lesions was procured in three days and of extensive tonsillar ulcerations in eight days. Treatment should be continued until complete recovery takes place, in the later treatments a 1.30 silver nitrate solution being sufficient. Ed.

380

Non-Diabetic Acidosis, with Special Reference to Postoperative Acidosis in Children. Ira Frank, *Annals Otol., Rhinol. and Laryngol.*, Dec., 1916.

The points emphasized by Frank are that acetone is found in the postoperative urine of practically all children. This acetonuria produces no symptoms in the great majority of cases. Varying degrees of acidosis or symptom-producing acetonuria follow anesthesia in about 20 per cent of cases in children, in individuals predisposed by chronic infections, age, etc. The symptoms of acidosis are such that three degrees of severity are apparent, viz: subacidosis—acetonuria and rapid pulse; acidosis—acetonuria, diacetic acid in the urine in small amounts, rapid pulse, drowsiness, rapid, shallow respiration; acid intoxication. Acidosis may be prevented or its degree lessened by a carbohydrate diet preceding the operation, by shortening as much as possible the starvation preparation, by the use of nitrous oxide or short ether anesthesia and by the use of further carbohydrate diet as soon as the patient is in proper condition following operation. Postoperative acidosis in any stage readily responds to solutions of glucose administered by mouth or by rectum, or in very severe cases intravenously, with sodium bicarbonate as a possibly valuable adjuvant. Ed.

387

Ulcerative Stomatitis. K. Goadby, *Lancet*, May 6, 1916.

The author reports on his bacteriological investigations in ulcerative stomatitis cases among the troops in France and in England. Smears made from the gums, cheeks or throat and stained by Giemsa's stain showed two morphologic types of bacteria: (1) bacillus fusiformis and (2) spirochetes. Both of these organisms were gram negative. The fusiform bacilli are 6 to 7 microns in length and resemble the diphtheria bacillus except that they are longer and larger and slightly curved. The spirillum resembles the spirillum of relapsing fever but lacks the characteristic "screw" form of the pallida. In hanging preparations from the tissue it is not motile. It is an obligatory anaerobe and serophile. Ed.

400

Diagnosis and Treatment of Vincents' Angina; Report of a Case Involving the Lungs. T. P. HINMAN, *Dental Cosmos*, Dec., 1916.

The author is of the opinion that the finding of Vincent's spirochete together with the fusiform bacilli, is sufficient to make the diagnosis. Clinically, the disease is an ulcero-membranous condition usually beginning in the cul-de-sac posterior to the last molar. Where the gums are primarily involved the tonsils are affected secondarily, and vice versa.

ED.

421

Further Observations on the Connellan-King Diplococcus Throat Infections; Their Sequelae with Special Reference to Arthritis. J. J. KING, *Trans. Amer. Med. Assn., Sec. Laryngol., Otol. and Rhinol.*, June, 1916.

Four cases are described and these show:

1. The frequent presence of the Connellan-King diplococcus in the crypts of the tonsils or at the roots of the teeth in arthritic patients suggests that it may be specific, and that a simple tonsilitis may be followed by very serious complications, due to an absorption of chemical toxins.

2. The danger of a general sepsis following tonsillectomy might be eliminated if a culture were taken from each patient.

3. If the focus of infection in arthritis exists in the tonsil, the treatment should consist in the injection of an autogenous vaccine until all infection is cleared up and then the tonsils should be removed by enucleation.

4. The blood changes in the Connellan-King diplococcus infections seem to be a simple anemia and, in a few cases, a slight increase in the eosinophils from 4 to 6 per cent.

5. In some cases symptoms other than those for which treatment was instituted have disappeared. For instance, in one patient with arthritis and marked ethmoiditis the culture was obtained from the throat. Within two weeks the ethmoiditis had cleared up, while the arthritis was only slightly relieved. Another patient with serious gastric disturbance, who had found it necessary to remain on a strict diet, was able to eat almost anything after she had received the treatment with the autogenous vaccine.

ED.

437

Researches Upon Alveolo-Dental Pyorrhea. JOSEPH MENDEL, *Annali di Odontologia*, Sept., 1916.

In view of the conflicting views as to etiologic role of the *entameba buccalis* in pyorrhea the author undertook a series of investigations on (1) the morphology of the amebae; (2) the presence of the amebae: a) in alveolo-dental pyorrhea; b) outside of pyorrheal conditions; c) in acute and chronic suppurations of dental origin (aveolo-dental abscesses); d) in the acute suppurations of gingival origin; e) in acute gingivostomatitis; f) in the acute and chronic accidents provoked by the eruption of the third molar; g) in dental caries; (3) the effect of emetine hydrochloride in pyorrhea. The results of these studies are condensed in the following conclusions: I. The presence of *entamebae* in the mouth of man is not at all an exclusive characteristic of alveolo-dental pyorrhea.

II. The *entamebae* are found in almost every case of alveolo-dental pyorrhea. III. The *entamebae* are always present in the caseous material which coats the teeth. IV. In clean mouths *entamebae* are present in almost half of the cases. V. In all cases of various acute infectious conditions ordinarily observed in the mouth *entamebae* were invariably absent. On the contrary, their presence was frequently observed in chronic conditions. The presence of *entamebae* in the mouth seems not to have any influence in the evolution of dental decay. VI. The treatment of alveolo-dental pyorrhea by emetine either by instillation in the suppurating pockets or by intra-gingival injection, was found inefficacious in every case experimented on by the author. VII. Oral hygiene is the most valuable means, if not for the complete exclusion of *entamebae*, at least for reducing their number. Ed.

453

Pseudotuberculoma Silicoticum of the Lip. C. R. Nitch. *British Med. Jour.*, Dec. 16, 1916.

A man, 39 years old, had fallen from a bicycle in 1905, cutting his nose and mucous membrane on the buccal aspect of the lower lip. He distinctively remembers spitting out blood and sand after he picked himself up. He used a mouth wash and healing took place in about fourteen days. The resulting scar, though somewhat thickened, underwent no change until 1916 (when he came under the author's notice), when a swelling began to form in the center of the scar. Four months after this swelling made its appearance the submental glands became enlarged and tender. Palpation of the tumor conveyed an impression similar to that given by a preputial chancre. Tumor together with the mucous membrane covering it was removed. Microscopic examination showed that the lesion consisted of a mosaic giant-celled systems and huge giant cells hardly to be distinguished from those of tuberculosis, though no caseation was present. No tubercle bacilli or other bacteria were discoverable. In practically all the giant cells, however, and elsewhere, there were particles of silica which stood brilliantly out when the sections were polarized. Hence the name *pseudotuberculoma silicoticum.* Ed.

457

Treatment of Malignant Disease About the Mouth by Combined Methods. George E. Pfahler. *Jour. A. M. A.*, Nov. 18, 1916.

1. The cases forming the basis of this report (Epithelioma of the dorsen of the tongue, 6 cases; epithelioma under the tongue and involving flow of the mouth, 6 cases; epithelioma of the cheek without palpable glands, 3 cases, involving the gums, jaw-bone and submaxillary gland, 9 cases; epithelioma of the tonsil, 4 cases) excepting those involving the lower lip, were almost entirely inoperable, and therefore every success is a distinct advance and every failure only a loss of time, energy and effort.

2. Any lesion about the mouth which does not show a tendency to heal within a few weeks should be looked on with suspicion of being malignant, and in case of doubt should be destroyed or removed.

3. Early lesions about the mouth can be destroyed by electrothermic coagulation with less loss of tissue, and more success than by any other means.

4. Deep roentgenotherapy should be added to any other method of destruction or removal of malignant disease.

5. Combined treatment by surgery, electrothermic coagulation, radium and deep roentgenotherapy will cure some patients who are otherwise hopeless. Ed.

461

Treatment of Ulcerative Sore Throat and Stomatitis. F. Ramond, *Progres Medical*, No. 24, Dec. 20, 1916.

The patient gargles first with a one per cent solution of cocain. If there is slight hemorrhage this can be arrested by gargling with a solution of hydrogen peroxide. The ulcer is then dried with cotton and touched with a weak solution of silver nitrate. This treatment should be repeated daily for several days. Ed.

499

Diathermia in the Treatment of Trifacial Neuralgia. H. F. Wolf, *Medical Record*, Dec. 30, 1916.

The author advises trying diathermia before other methods are tried, such as alcohol injections or ganglion resection. He prefers to apply the electrodes in such a way that the ganglion is between them (one electrode at the back of the neck and the other over the eye which should be protected by cotton pad moistened with saline solution). The strength of current should be about 700 milliamperes. The duration of each treatment should be from one-half to one hour. Ed.

510

Cholesteatoma Removed From the Frontal Sinus. A. Haeggstrom, *Oto-Laryngologiska Meddelanden.* Bd. 2, H. 2, Aug., 1916.

Patient, 39 years old, noticed that his right eye was gradually becoming displaced accompanied at times by headache on the affected side. No disturbance of vision. The trouble proved to be a cholesteatoma of the frontal sinus with enlargement of the walls of the sinus and their destruction on the side of the brain and orbit. Successful removal of the growth by incision in the brow. Ed.

512

Intranasal Surgery for Relief of Chronic Frontal Sinusitis. Lee M. Hurd, *Jour. Amer. Med. Assn.*, Dec. 16, 1916.

One of the disadvantages of the present internal methods is the uncertainty of results and the constriction of the drainage passage into the nose which nearly always occurs a few weeks after operation. With the internal methods there are more accidents than when the sinus is opened externally. The indications for intranasal operations are all cases of chronic sinusitis without complications. Contra-indications are intracranial and orbital disorders and fistulas, all of which should be approached by the external route. The author describes his method of operation. For after-treatment he applies bismuth paste, douches with aqueous solutions and applications of silver nitrate and sodium chloride. He does not favor douches with antiseptic solutions. The bismuth paste has given him very good results, reducing the discharge and swelling. Ed.

523

Surgical Observations of Chronic Frontal Sinusitis and its Complications.

D. A. Vanderhoof, *Colorado Medicine*, Nov., 1916.

Transillumination is of little diagnostic importance in frontal sinusitis. The x-ray may not always show a diseased sinus but it does show the shape and size of the sinus. A radiograph should always be made before undertaking a frontal sinus operation. In chronic conditions of the frontal sinus it is necessary to make sure that all diseased ethmoid cells are removed before doing any work on the frontal. Ed.

526

The Accurate Radiography of the Pituitary Fossa and of the Sphenoidal Sinuses.

H. Trevelyan George, *Jour. Radiol. and Electrology*, Dec., 1916.

George describes a device for making certain that the median sagittal plane of the head shall be perpendicular to the vertical line drawn through the focal point on the antikathode. In the ordinary lateral view of the head great accuracy of focus is not required but in radiography of the pituitary fossa and of the sphenoidal sinuses a true lateral view is essential. George's method is a modification of Finzi's method of placing the head by means of coins over the external auditory meatus. Instead of using coins (the lower coin may give a larger shadow than the upper) he uses a lead ring made by describing two concentric circles on a piece of thick sheet lead and cutting away the superfluous lead. The diameter of the outer circle should be 20 mm. and that of the inner circle 14 mm. The thickness of the lead should be 1½ mm. Instead of the upper coin a circular lead disc 7 mm. in diameter is used.

Assuming the x-ray tube to be situated under the table, the lead ring is placed in the lower auricle, the compound disc in the upper auricle, and both fixed in their places if necessary by strapping. The head is then placed "by eye" in an approximately lateral position and screened. In general, the two shadows will not be concentric. The head is then manipulated until the shadow of the disc is seen to be in the center of the transparent area bounded externally by the shadow of the lead ring.

We now have a true lateral view of the head, and we also know that the vertical ray from the focal point of the anticathode passes through a definite point in each ear which is very near to the center of the external auditory meatus.

The radiography of the pituitary fossa is then proceeded with in the usual manner by moving the tube 3 cm. forwards and 2½ cm. upwards, or if the sphenoidal sinuses are to be taken, by moving the tube 3 cm. and 1 cm., respectively.

George states that a great advantage of the method is that one can always check whether the manipulations have been carried out correctly. A straight line joining the centers of the ring and disc should pass through the center of the pituitary fossa. Ed.

535

Technique of Sphenoidal Sinus Exploration for Meningococcal and Other Infections.

P. Watson-Williams, *Bristol Med.-Chir. Jour.*, V. xxxiv, 1916.

The author advises routine exploration of these sinuses in all cases in which the meningococcus has been found in the cerebrospinal fluid removed by lumbar puncture and in those in which the organism has been found in the nasopharynx. The sinuses may be explored by passing a cannula through the natural ostium or through the thin anterior wall. The latter method is preferred by the author because it is hardly possible to pass a cannula into the sinus without previously or subsequently contaminating it while passing through the narrow olfactory fissure so that the culture obtained may be misleading and as the cannula fills the ostium neither air nor fluid can enter or escape and no contents can be withdrawn as there is no "bung hole."

In gaining entry through the anterior wall, the author uses a blunt trocar and cannula, directing it upward and backward so as to aim about one inch behind the center of the back of the eyeball. On reaching the anterior face of the anterior sinus wall, the proximal end of the cannula is raised and the distal end pressed into the sinus.

Having previously drawn about 6 ccm. of sterile water into the suction syringe, the syringe nozzle is inverted into the cannula and about 3 ccm. of water is thrown into the sinus and at once slowly withdrawn. The purpose of the water is to dilute thick pus or mucus which could not otherwise be aspirated. ED.

538

Carcinoma of the Ethmoid Treated with Mesothorium. CLINTON C. COLLIER, *Jour. Ophthal., Otol. and Laryngol.*, Oct., 1916.

Patient a woman 50 years old. Operation followed by recurrence. One hundred mg. mesothorium applied for 24 hours. Two other exposures for equal length of time. Due to insufficient filtration of the rays, reaction very severe. Ultimate recovery. The author cautions against the use of mesothorium and radium except in expert hands. The filters should be of heavy silver and the mucous surfaces should be protected from secondary rays by rubber tissue. ED.

540

Empyema of the Ethmoid Cells. GEORGE F. COTT, *Jour. Amer. Med. Assn.*, Dec. 16, 1916.

The symptoms of a typical acute case are the clogging of the nasal passages, pain intensified by jar, often felt above the cells or on top of the head, with dizziness and vomiting, prostration and delirium. It lasts until the discharge begins, when it becomes markedly lessened and intermittent. In four or five days, only the discharge remains, and continues a week or two longer. The recovery, however, is not complete, and in many cases the sinus remains sensitive for years. In chronic empyema the mucosa becomes thickened by fibrous tissue, and there is a tendency to the occlusion of the ostium swelling of the membrane. The most troublesome symptom is usually discharge with spitting, dry secretion in the pharynx and sometimes crust formation in the nose. The discharge may last for years or the patients may never entirely recover. The after-symptoms cause the patient to call on the rhinologist. There are headaches over the bridge of the nose, over the eyes or forehead or on top of the head or at the base of the brain, scotoma, inability to read but a few minutes, complaint of hay-fever all the time, hacking and spitting during cold weather, inability to concentrate attention, and finally neurasthenia. The pain descends toward the shoulder or follows the course of some nerve branch remote from the seat of the disease. Other symptoms like malaise, etc., may occur, and a cough without raising anything for several weeks recurring once or twice during the year. In this condition, which he calls latent ethmoiditis, the sensory nerves show their irritability, and in many patients vitality is lowered and the heart sounds are weak. Occasionally puncturing the anterior cells will give relief of pain. Palliative treatment with cocain, epinephrin and sprays or washes seldom give full relief. These cases seldom terminate fatally, but suffering is sometimes almost unbearable. Several cases are briefly reported or referred to. Cott has never seen caries occur except in syphilis. He has seen epilepsy twice, and in two cases asthma of recent origin, all relieved by the ethmoid operation, one epileptic permanently. Ed.

543

The Oblique Method of Roentgenography of the Ethmoid and Sphenoid Cells. Samuel Iglauer, *Jour. Amer. Med. Assn.*, Dec. 23, 1916.

Roentgenography of the accessory cavities of the nose by the usual technique is unsatisfactory especially of the ethmoid and sphenoid cells because of the fact that these lie in a row vertical to the plate and overlapping thus takes place. The oblique method of Rhese is the most valuable for the study of ethmoid and sphenoid disease. The patient lies on his side on the table with his face in contact with the photographic plate so that the head is in contact at three points, the malar eminence, the outer edge of the supraorbital margin and the tip of the nose. The central rays go through the upper edge of the auricle and are thus directed obliquely through the head but vertically on the plate. However, for purposes of comparison a plate must be made of each side. Iglauer points out that there are certain landmarks to guide one in the interpretation of the roentgenograms and that the chief advantage of the oblique method lies in the ability to detect anterior or posterior ethmoid or sphenoid disease. Ed.

550

Surgery of the Ethmoid. G. E. Shambaugh, *Jour. Amer. Med. Assn.*, Dec. 23, 1916.

Certain constant anatomic points have to be considered in all cases of its surgery. The first is to keep in mind the openings of the ethmoid cells into the nose. The second important anatomic point is the relation of the ethmoid to the orbit, and a third which has an important surgical bearing is the relation between the ethmoid cells and the brain fossa. There are also certain anatomic variations which may occur that must be remembered when working in this region. One of these is the development of ethmoid cells outside the usual limits of the labyrinth and another variation is the development of an ethmoid cell in the unciform process which is not quite as frequent, though in both cases the cell formed may be large. Operations on the concha media are undertaken for different conditions, some having to do with pathologic conditions outside the ethmoid, such as disease in the frontal and maxillary sinuses. Resection of the concha media, laying open the middle meatus, is often the simplest way to relieve obstruction causing retention in the resection of that part of the nasal wall of the maxillary sinus lying in the middle meatus, and in securing adequate drainage for acute or chronic empyema of the frontal sinus. The conditions in the ethmoid itself mentioned as calling for the resection of the concha media include cases in which the middle turbinate is wedged so tightly between the septum and the outer wall of the nose that it impairs the normal ventilation of the anterior ethmoid cells, and it is also undertaken to relieve obstruction due to a bullous enlargement of the concha media itself. Where the resection of the concha media is indicated the operation is sometimes more difficult to carry out, and Shambaugh describes an operation which he has used of late years and which was devised by Andrews. He has found it feasible to remove the middle turbinate in the most difficult cases. The exenteration of a part of the ethmoid labyrinth is undertaken chiefly in the effort to secure better drainage for the frontal sinus infections, while a complete exenteration is done chiefly for the relief of two pathologic conditions; one the diffuse hyperthrophic ethmoiditis and the other the chronic purulent ethmoiditis. It is described in detail. ED.

554

Maxillary Sinusitis in the European War. DR. GEORGES CANUYT, *Revue de Laryngologie, D'Otologie et de Rhinologie*, Jan. 31, 1916.

The radiograph shows clearly the position of the projectile, therefore, whenever possible, it should be used, as it enables us to see the projectile from different angles and locate its position exactly.

The author has had excellent results with a special method of producing anesthesia in this region. He prefers novocaine (1 to 200) to which adrenalin solution has been added. Anesthesia is obtained by injecting the trunk of the superior maxillary by way of the orbit. The point of etnrance lies at the intersection of a line drawn from the superior border of the zygomatic arch and a line along the orbit or at the external angle of the orbit. The needle follows the floor of the orbit, pointing downwards and backwards towards the orbital fissure until the sudden loss of resistance is felt. The needle is held horizontally, the head being erect so as to avoid entering the subtemporal fossa through the inferior fissure.

The nerve is reached after the needle has penetrated a distance of five centimeters. A successful injection is followed by complete anesthesia of the areas suplied by the superior maxillary nerve. The corresponding part of the face also becomes blanched from the action of the adrenalin. The injection is sometimes followed by haematoma of the orbit, which, however, is soon absorbed.

Theoretically this method of anesthesia through the orbital route should be sufficient, but as an additional precaution, the author injects five cubic centimeters at the exit of the infra-orbital nerve and five cubic centimeters into the canine fossa and finally anesthetizing the nostril with a ten per cent cocain adreñalin solution. W. SCHEPPEGRELL.

563

Relation of the Teeth to the Maxillary Sinus. ROBERT H. IVY, *Jour. Ophthal., Otol. and Laryngol.*, Jan., 1916.

Conclusions: 1. The possibility of infection from a dental source should never be ignored in a case of maxillary sinus disease. 2. The tooth roots in direct relation with the floor of the antrum of Highmore may be affected with apical disease in the absence of all ordinary symptoms and signs, the disease being only demonstrable by the x-ray. 3. The antrum is more frequently opened during the extraction of certain teeth than is generally supposed, there being a local absorption of the floor by the dental disease. 4. Considerable difficulty is sometimes experienced in differentiating the x-ray shadow of the maxillary sinus from the outlines of pathological cavities such as cysts and abscesses. Ed.

572

Surgical Treatment of Chronic Maxillary Sinusitis. W. E. Sauer, *Jour. Amer. Med. Assn.*, Dec. 30, 1916.

The necessary requirements of a good operative procedure are a large opening or openings of sufficient size to permit thorough inspection and good drainage with the least disturbance of nasal function. This, he believes, can be accomplished by a modified Canfield, such as the Skillern method, or a Denker operation in which the inferior turbinate is left intact. The most important consideration in judging as to the necessity of a radical operation is that of the primary or secondary character of the maxillary sinus involvement. The claim of Jansen that if one sinus is infected all are is not tenable. When, however, the antrum is a reservoir of frontal or ethmoid suppuration to which it is secondary, and the trouble is not of too lond standing, it is frequently necessary to cure only the primary trouble and then, at most, to treat the maxillary by lavage. Failure of the radical maxillary operation is frequently due to oversight of such lesions as decayed teeth or necrotic bone, as well as to pathologic conditions in the nose, etc. The value of the Roentgen ray in detecting these conditions cannot be overestimated. Systemic infections, like syphilis and tuberculosis also, here as elsewhere, must not be overlooked. Ed.

588

Roentgenography in the Diagnosis of Suppuration in the Accessory Nasal Sinuses. R. Gording. *Nordisk Tidskrift f. Oto-Rhino-Laryngol.*, Bd 1, H. 1, 1916.

Roentgenography is of greatest importance in frontal sinusitis and in the discovery of involvement of more than one sinus. It is also valuable in demonstrating the presence or absence of asymmetry in the sinuses. The sphenoid sinus is the only one that is not shown up by sagittal Roentgenography and even the radiogram taken from the side is not reliable because of the fact that the shadows of the two cavities are superimposed one on the other. When septa are present and the front wall is thick the picture may give a dark shadow even though the sinus is not diseased. The paper is illustrated with 21 photographs of healthy and diseased sinuses. Ed.

590

Sinusitis from War Wounds. Guisez and Oudot, *Presse Medicale*, March 23, 1916.

The report deals with 48 cases of accessory sinus inflammation, all resulting from wounds sustained in the war. Of these cases the distribution was as follows: Maxillary sinus, 38 cases; frontal and ethmoidal sinuses, 8 cases; ethmoidal sinuses alone, 5 cases. From the authors' experiences it would seem that the presence of a missile in the sinus (maxillary) had no direct influence on the development of sinusitis. In many instances of maxillary sinusitis the bullet or fragment of shell had entered through the mouth and submaxillary region. Sometimes a severe local contusion or superficial wound was sufficient to set up a sinusitis, even without the penetration of the bullet into the antrum. In some cases the amount of bone destruction and laceration of tissue and vessels was extensive, necessitating the ligation of the carotid or packing of venous sinuses. Treatment consisted of removal of the foreign body and in maxillary sinusitis the Luc operation was performed, the canine opening into the antrum being left partly open to permit of observation and treatment with silute tincture of iodine. ED.

604

A Case of Pansinusitis Complicated with Acute Suppurative Appendicitis and Acute Mastoiditis. JOS. E. SHEEHAN, *Medical Record*, Oct. 7, 1916.

This unusual case occurred in a young woman 26 years of age. She complained of a chronic nasal discharge for more than two years, with the usual head symptoms and a loss of eighteen pounds in weight in a year. All tests as to specific and tubercular disease were negative. After operation upon the nasal and frontal sinuses the appendix became infected, and ten days later the mastoid showed symptoms of invasion. Both regions were treated surgically, and the mastoid cavity revealed a perisinus abscess. A combined vaccine assisted in the recovery of the patient. M. D. LEDERMAN.

609

Malignant Disease of the Nose and Accessory Sinuses. SIR ST. CLAIR THOMSON, *Lancet*, May 13, 1916.

Two cases are reported, one of endothelioma of the ethmoid and antrum (no recurrence after five and one-half years), the other, epithelioma of left maxillary and antrum. The subjective symptoms were slight and recent; grumbling pain in the cheek for two months. In the Moure operation two facial incisions were made instead of the single one now recommended. Alarming symptoms, suspicion of serous meningitis, followed the operation, but subsided in a few days. The growth was a squamous-cell carcinoma and although it had broken through the canine fossa and the antro-nasal wall, there has been no recurrence after four years. The absence of disfigurement and the comfort of the patient, especially when compared with the operations formerly employed in general surgery, are remarkable. There is no trouble in the way of atrophic rhinitis, in spite of turbinal removal, and there is no epiphora.

The author makes a plea for the performance of the Moure operation or lateral rhinotomy for malignant tumors originating in the antronasal wall, the roof of the nose, in the antrum, or in the sphenoid. The advantages claimed for this procedure are:

1. In all cases there is no mutilation or disfigurement. 2. Patients will readily consent to the operation. 3. They are left with an intact roof of the mouth and no troublesome obturator is required as in the old operation of excision of the upper jaw. 4. It is much easier after a Mouer operation to keep a direct lookout in the nose and its accessory cavities for any suspicion of recurrence. 5. Recurrences are more

easily dealt with, either through the nasal orifice, or by repeating the lateral rhinotomy, and patients are less likely to object to this than to a further facial disfigurement. 6. It can be extended to meet the variable conditions met with, or may be combined with other operative steps; for instance, if it is found that the disease has deeply invaded the orbit this cavity can be cleared out through the same incision, preserving the lower eyelid, sacrificing the eye if necessary. The nasal septum can be removed if the growth has attacked it. The antrum might be further dealt with by an incision through the canine fossa, but the access to the antrum obtained by a Moure operation cannot be improved upon. This may also be combined with the Denker operation. If the floor of the nose is found to be invaded the addition of a Rouge operation can be made. 7. Externally the car within a few months is so slight as to be almost invisible. 8. Hæmorrhage can be well controlled. 9. The front wall of the sphenoid is brought so well into the field that it is hardly one inch from the surface. ED.

621

Unusual Case of Speech Inhibition. S. BLANTON, *Jour. Abnormal Psychology*, Dec., 1916.

The case reported was one of psychoneurosis due to mental conflict. It was an accentuation of fear and timidity. The boy's vocal cords and hearing were normal. At home he talked in a good loud tone when he was playing with his brothers. However, when on the playground with other children, he would not speak, even when playing games. At home, he speaks much less than do his brothers. He seems to try to avoid speaking. For example, if he desires something at the table, instead of asking for it, he gets it himself. However, he sometimes sings after he has gone to bed, and then his voice is full-toned and pleasant. He appeared to be suffering from mental conflict resulting in an inhibition of his speech. Blanton points out that this case shows that parents and teachers should not neglect to take notice of cases of excessive timidity in children that prevents them from speaking when in school or with strangers. This excessive fear is due to infantile conflicts and repressions and lack of adjustment, and unless these conditions are removed, a serious neurosis may develop.

630

The Etiology of Stuttering. JOHN M. FLETCHER, *Jour. Amer. Med. Assn.*, April 8, 1916.

The author separates stuttering from stammering and other speech defects on the ground of its intermittent character, its non-association with organic lesions and its dependence on certain states of mind, emotions, feelings, etc. The symptoms may be classed under three heads: physiologic, psychophysical and mental. Under physiologic we find, first, disturbances of breathing, the stutterer withholding inhalation beyond the point of the inception of speech, often attempting to speak with empty lungs. In other cases the natural rhythm of breathing is disrupted (as shown by ragged, irregular waves instead of regular waves on the pneumograph), so that the speech becomes spasmodic. Physiologic and psychophysical symptoms lack the definiteness of correlation needed to give them pathognomonic value. Among the mental causes are fear, anxiety, distrust, etc., but in addition, also, there are "attitudes" affecting the stutterer's ability to speak, particularly attitude towards others. The conclusions reached are (1) that stuttering is a mental defect and (2) that the treatment should be primarily educational. Ed.

639

Agitophasia Associated with Agitographia. J. S. Greene, *Medical Record*, Oct. 28, 1916.

In agitophasia the mental action is so rapid and the desire to speak is so excessive that the speech organs cannot keep pace, there being a disproportion or a form of ataxia showing an incoordination between the desire to talk and the motor skill. The normal time correlation between speech and thought is lost. Attention to what is heard is so superficial that on repetition many words are distorted, swallowed and mutilated. Pathologically Broca's area is involved so that motor vocal memories are distorted. The agitographia is explained by the fact that the graphic motor word memories, being acquired last, are the least deeply imprinted and most easily disarranged. There is also lingual ataxia due to a defect in the "ideogenic center." The fundamental basis of all treatment in cases of agitophasia with or without agitographia is the inculcation of a sense of rhythmical slowness, both in speech and in writing which is best accomplished by suitable pedagogic exercises. Ed.

652

Hysterical Mutism. G. Hudson Makuen, *New York Med. Jour.*, May 27, 1916.

The mutism occurs generally in conjunction with other hysterical phenomena, although it may be the only hysterical symptom. Hysterical mutism may occur in conjunction with organic diseases which themselves simulate hysteria. Hysterical mutism differs from hysterical aphonia in that the mutism shows a more extended disability of the speech mechanism and it differs from motor aphasia in that the mutism is absolute.

Dr. Makuen states that he has seen only two well defined cases of this condition, one reported by him in 1906 and the second the subject of the present report. This case is discussed in detail not only from the laryngological point of view but also from the neurological. Attempts to "scare back" (there had been a severe fright from a threatened railroad accident) her voice were unsuccessful and very little progress was made with attempts to develop whispered speech. Finally, some friends of the patient took her to a religious camp meeting where she was induced to "pray back" her voice and she was urged to pray long and loud. The enthusiasm and excitement were intense and this seemed to be necessary to bring about a mobilization or aggregation of her psychical forces and to enable her to speak with a laryngeal sound after many months of complete aphonia. Ed.

658

A Note on Treatment of "Functional Aphonia" in Soldiers from the Front. W. Milligan, Proc. Royal Soc. Med., Laryngol. Sec., April, 1916.

The author has had a number of very troublesome cases of aphonia among soldiers; the worst type has been when the soldier has been temporarily buried as the result of a shell explosion and has been rescued very much "shocked." Drugs, putting a brush in the larynx, using electrodes, etc., have been of no avail in restoring the voice. The patient is then etherized and when he has partially come out of the anesthetic a laryngeal spatula is introduced into his larynx and moved about. As a rule the patient begins to shout and he is encouraged to do so until he is quite aware that he is shouting. Ed.

659

General Narcosis as a Measure for the Cure of Hysterical Mutism, Aphonia and Deafness. M. Moriondo, *Arch. ital. di Otol., Rinol. e Laringol.*, Nov., 1916.

This method has proved of immense value in many cases of mutism, aphonia and deafness of psychoneurotic origin resulting from shell shock. The patient is anesthetized with ether and in many cases has been able to use his voice or hear after months of ineffective other treatment. Ed.

661

Loss of Speech Caused by Nervous Shock. Giuseppe Pansera, *Policlinico*, Dec. 10, 1916.

The patient was a soldier who in August, 1916, became mute after the explosion of a grenade close to him. Various measures were tried without success. Finally—his hearing was normal but he was completely speechless—he was placed under an anesthetic and he recovered his speech. At first it was monosyllabic but after a course of vocal exercises it became normal. In answering questions he stammered a little, a defect which he had not had before. Ed.

663

Mutism and Deafness Due to Emotional Shock Cured by Etherization. D. F. Penhallow, *Boston Med. and Surg. Jour.*, Jan. 27, 1916.

The author's experiences agree with those of others at the front as to the value of general narcosis in cases of hysterical mutism and deafness resulting from shock due to shell explosion or emotional disturbances. Ed.

668

Deaf-Mutism from Shell Explosion Causing Injury to the Medulla Oblongata. A. von Sarbo, *Medizinische Klinik*, Sept. 17, 1916.

In some of the cases of shell shock there is actual damage especially to the centers of the eighth, ninth, tenth and twelfth nerves, causing deafness and loss of the power of speech as a result of the driving in of the medulla into the foramen magnum and the cerebrospinal fluid into the fourth ventricle. In other cases the shock may produce fracture of the base of the skull with injury to the nerve centers in the medulla. The prognosis is, in a large proportion of cases, good. Ed.

686

Window Resection of the Larynx for the Removal of Intrinsic Malignant Diseases. F. Adams, *Northwest Medicine*, Oct., 1916.

The author reports a case of carcinoma of the left vocal cord for the removal of which a window resection was performed and after giving a description of the operative technique he states that the great advantages of this method result from the easy access it provides. Instead of operating through a narrow slit, one has ample room, can see the limits of the growth and take away exactly as much tissue as one wishes. The operation can be caried out rapidly. It would not be too much to claim that, from the time of the tracheotomy being completed, the subsequent steps of the operation do not occupy half the usual time required for thyrotomy. All bleeding points may be controlled with pressure forceps in the usual way. Ed.

692

Operative Treatment of Supralaryngeal Stenosis by External Pharyngotomy and Consecutive Plastics. G. Axhausen, *Arch. fuer klin. Chir.*, p. 533, 1916.

Axhausen gives the details of two highly developed cases of pharyngeal stenosis in which he performed an external pharyngotomy followed by a plastic operation a month later. He believes that in severe stenosis there is a great advantage in the radical operation practiced by him and that the stenosis can be thus overcome with certainty together with laryngeal displacement, if present, to improve respiration. Ed.

693

Laryngeal Abscess. Milton T. Ballin, *New York Med. Jour.*, Oct. 21, 1916.

Laryngeal abscess is one of the unusual affections of the throat, and that it is not more frequent is surprising when the number of people suffering from inflammatory processes of the throat is considered. It may arise as a primary condition, or secondary to some other infection. It is an infection of adult life and never met with in children as a primary condition. It is surprising that abscess of the larynx is so infrequent, probably due to its anatomical site.

It may arise primarily as overexertion, rheumatism, catarrhal conditions, etc. Secondarily it is seen in pyemia, peritonsillar abscess, erysipelas. It may be extra or intralaryngeal. Most cases are unilateral. It may extend into deep tissues of the throat. Most abscesses are extralaryngeal. Its course is rapid, usually reaching its termination in ten days.

Symptoms are at first simply a burning sensation in the throat. Then the symptoms of pressure, with enlargement of the cervical glands and temperature elevation. Voice becomes thick, and mucus secretion is blood tinged.

Diagnosis is made by the symptoms and laryngeal examination, by laryngoscope or mirror. The treatment is conservative. Relief of pain by sprays and inhalations and cold compresses. Sooner or later it is necessary to open the abscess under cocaine anesthesia. If the pressure symptoms increase it may be necessary to do a tracheotomy.

Francis R. Packard.

710

Right Laryngohemiplegia Following a Goiter Operation. L. G. Davidson, *Med. Jour. of Australia*, June 3, 1916.

The loss of voice occurred immediately after the operation. As soon as patient attempted to drink any liquid a violent laryngeal spasm was set up. These attacks occurred two or three times daily for a considerable time. The voice was reduced to a whisper at first and afterwards became husky, feeble and unmuical. At times it was also bitonal. Examination revealed complete right laryngohemiplegia. The right arytenoid was motionless; the right cord, crescentic in shape, was motionless. After twelve months the voice began to improve. The choking attacks lessened in frequency. The patient regained a very fair use of her voice for ordinary purposes. Ed.

711

Fractures of the Larynx. C. Escalada, *La Prensa Med. de Argent*, V. 2, p. 431, 1916.

The author made six series of experiments on the cadaver, using anteroposterior pressure upon the thyroid and cricoid. He then repeated the experiments using transverse pressure. In general he found that a pressure of 55 to 80 kilograms was necessary to fracture the larynx, but that the force varied with the age of the subject and the degree of ossification. Ed.

714

Clinical Pathology of Tuberculous Laryngitis. Julius Dworetzky, *Annals Otol., Rhinol. and Laryngol.*, Dec., 1916.

A study of one hundred cases of laryngeal tuberculosis showed the following incidents: *Sex*, males 64, females 36; *age*, between 15-20, 14; between 21-30, 53; between 31-40, 21; between 41-50, 12; *sputum*, positive 100; *pulmonary stage*, incipient 12, moderately advanced 59, far advanced 29; *laryngeal stage*, first stage 60, second stage 33, third stage 7; *clinical types*, acute 9, subacute 52, chronic 39; *epiglottis*, negative 16, congested 42, anemic 14 (clinically non-tuberculous 72), slight infiltration 20, marked infiltration 3, infiltration with erosion 5 (tuberculous 28); *interarytenoid space*, negative 5, congestion 4 (clinically non-tuberculous 9), slight infiltration 41, marked infiltration 25, infiltration with erosion 18, papillomatous growths 6, tuberculoma 1 (tuberculous 91); *aryepiglottic folds*, non-tuberculous 80, tuberculous 20; *arytenoid cartilages*, clinically non-tuberculous 44, tuberculous 56: bilateral involvement 43, unilateral involvement 13; *ventricular bands*, clinically non-tuberculous 73, tuberculous 27; bilateral involvement 15, unilateral involvement 12; *vocal cords*, clinically non-tuberculous 58, tuberculous 42; bilateral involvement 30, unilateral involvement 12; *vocal process*, clinically non-tuberculous 40, tuberculous 60; bilateral involvement 44, unilateral involvement 16.

The author's classification of tuberculous laryngitis: *Stage of infiltration*, positive sputum (negative in exceptional cases), recurrent or persistent hoarseness, dysphagia present or absent, sign of infiltration of any or all parts of the larynx, especially interarytenoid space, vocal cords, aryepiglottic folds, ventricular bands, arytenoid cartilages or epiglottis. *Stage of edema with superficial erosion*, positive sputum, persistent hoarseness, dysphagia present or absent, dysphonia present or absent, signs of tumefaction of the larynx with superficial erosion. *Advanced stage*, positive sputum, marked hoarseness or aphonia, dysphagia present or absent, dysphonia present or absent, marked tumefaction and ulceration of any or all parts of the larynx, perichondritis sometimes present. Ed.

743

Aphonia with Mitral Stenosis. L. R. Lanza, *Gaz. degli Ospedali e delle Cliniche.* Jan. 16, 1916.

Three cases. The first, pressure on the left recurrent nerve by the enlarged heart; the second, paresis limited to abduction of the left vocal cord; the third, edema of the vocal cords. Ed.

746

Tuberculous Laryngitis and War Aphonia. G. Liebault, *Rev. de Laryngol., d' Otol. et de Rhinol.*, No. 20, Oct. 31, 1916.

Among the men who have lost their voice in the war some attribute their aphonia to commotion or nervous traumatism caused by shell explosion. In most cases, however, the aphonia comes on gradually without shock. Some come to the services of voice re-education with a diagnosis of more or less obstinate nervous aphonia; others come with a diagnosis of definite or suspicious tuberculous laryngitis. Liebault saw ten cases where in addition to evident tuberculous lesions there were lesions of overstrain of the voice or chronic laryngitis. Appropriate treatment with a course of phonetic re-education effected a cure. All of these soldiers traced their condition to their stay in the trenches where they suffered from fatigue, cold and wet, and would begin with a cold developing into bronchitis with hoarseness and finally loss of voice. In some cases tuberculosis is suspected but very often no bacilli are found, and the man is sent to be treated for laryngitis. In some the mirror shows at first sight a normal state of things; it is only when an effort is made to produce the voice that it is seen that the vocal cords do not approximate; there is paresis of the constrictors, which may be affected all together or separately. Such a case is one of pure nervous aphonia, curable by ordinary care and re-education. There are other cases, more ill-defined in character, which may give rise to the suspicion of incipient tuberculosis. Examination is difficult owing to an irritable condition of the mucous membrane; the upper orifice of the larynx is sometimes swollen and at first sight the interarytaenoid region looks thickened and velvety; the ventricular bands are also tumefied. In spite of these appearances, many elements warranting the diagnosis of bacillary laryngitis are lacking. There is no pallor of the velum, sometimes, on the contrary, there is increased redness; no hyperaesthesia, but only pharyngeal irritation. Careful analyis of the objective intralaryngeal conditions is important. The swelling of the ventricular bands is a thickening rather than an infiltration. The thickening of the interarytaenoid mucous membrane, which used wrongly to be regarded as a premonitory symptom of laryngeal tuberculosis, is in the cases under consideration a hypertrophic rather than an oedematous condition. Moreover, the mucous membrane covering the arytaenoid cartilages looks healthy, and the cartilages themselves move freely; the aryepiglottic folds do not show the puffiness characteristic of bacillary laryngitis. If the doctor tries to make the patient produce a sound the whole laryngeal vestibule is seen to close up, so that the vocal cords are hidden; if seen, they are often white, sometimes a little rough and reddened, but they never present the erosions like finger-nail scratches or the carmine redness which is so suspicious in a patient suffering from fatigue. Lastly, they work im-

718

Roentgen Treatment of Benign Growths of the Larynx. J. W. FRANK, *Jour. Ophthal., Otol. and Laryngol.*, Nov., 1916.

The author states that the Roentgen treatment of benign growths of the larynx has been quite successful and he summarizes the following technique: High penetration equal to about a nine-inch spark gap; filter of three or four millimeters of aluminum; cross fire application and an exposure sufficient to turn a Sabourand pastille to five or six points on the Hampton radiometer scale. Treatment should be repeated once in three weeks until a cure is accomplished, usually requiring from three to five series of treatments. ED.

726

Some Suggestive Indices to Dysphonia. J. A. HAGERMANN, *Med. Rev. of Reviews*, Sept., 1916.

The author points out that functional aphonia may be met with during the course of diseases occurring remote from the larynx and which are marked by evidences of toxemia such as jaundice. Chronic lead poisoning may be characterized by unilateral or bilateral paralyses of the vocal cords. A latent empyema of an accessory sinus may be the source of an excretion of purulent fluid which, trickling down the posterior pharyngeal surface perpetuates a chronic congestion of the posterior laryngeal wall, with accompanying hoarseness. The protean manifestations of obscure laryngeal symptomatology which sometimes characterize adolescence, the menopause and continence and which are inclusively denominated as hysterical, would be more judiciously analyzed if we were to cease concentrating our attention upon the palpably incapacitated organ. It is well established that toxins emanating from certain strains of bacilli exercise a definite selective function in choosing a host. In the absence of patent signs to account for difficult or impossible phonation, the age, sex, general health and civic environments must be considered. ED.

739

Improved Operation for Intrinsic Disease of the Larynx. H. L. LACK, *Lancet*, Nov. 11, 1916.

The steps of the operation are as follows: The larynx and upper rings of the trachea are exposed the usual vertical median incision and a tracheotomy tube is inserted. The soft tissues of the perichondrium are then turned off the thyroid cartilage on the affected side and the cricothyroid membrane and the ring of the cricoid are laid bare. Thyrotomy. Inspection of the growth through the opening thus made. With strong cutting forceps the growth, with a sufficient margin of healthy tissue together with the overlying cartilage, is cut away in one piece. If, however, it is known that the growth is malignant and that it is limited to one vocal cord, thyrotomy is not necessary. With a small saw the thyroid cartilage is divided in the median line from its lower edge upward nearly to the upper margin. A transverse incision is then carried backward just below the upper edge of the thyroid nearly to the posterior border and then downward just in front of the posterior border. The square piece of cartilage thus marked out is removed. The larynx is subsequently opened by dividing the underlying soft parts. ED.

platform. Then a thread is passed through the eyelet and moored to the patient's ear. It is drawn fairly tight and examination is made every two or three days to see that accurate position is maintained. In this way reunion is prevented. ED.

757

Operation of Laryngofissure; Some New Instruments for Improving the Technique. I. MOORE, *Lancet*, Oct. 14, 1916.

The author has designed the following satisfactory instruments: thyroid clamp; tracheal shears; thyroid cartilage saw (and shears); self-retaining retractor; intralaryngeal forceps and scissors. ED.

762

Thermotherapy in Certain Forms of Catarrhal and Tuberculous Laryngitis. E. J. MOURE and GOT, *Rev. de Laryngol. d' Otol. et de Rhinol.*, No. 9, May 15, 1916.

The cases treated by the authors consisted of the following: Spasmodic laryngitis, 2; acute simple laryngitis, 7; acute influenzal laryngitis, 5; chronic simple laryngitis, 2; post-influenzal laryngitis, 2; tuberculous laryngitis, 12. In the spasmodic form good results were obtained during the treatment, but in the interals between the treatments the spasmodic attacks recurred. In the simple cases from four to fifteen treatments were necessary to bring about a cure in all the cases. The same can be said about the influenzal cases. In the chronic simple cases improvement was even more rapid than in the influenzal. In the tuberculous cases the results were very encouraging in the early cases and nil in the more advanced cases. ED.

764

Fibrolipoma of the Larynx. GORDON B. NEW, *Jour. Amer. Med. Assn.*, Feb. 19, 1916.

A report of a case in a woman, 29 years old, the symptoms dating for about eight years. The tumor was removed by thyrotomy. It had no definite pedicle. ED.

777

Papilloma Malignum Laryngis. E. SCHMIEGELOW, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Bd. 1, No. 1, p. 1, 1916.

The author calls attention to the difficulties in diagnosis of endolaryngeal malignant growths and urges that no operative measures of a radical nature should be undertaken without a preliminary microscopic corroboration of the diagnosis. As an example that the clinical diagnosis is not always reliable he cites the case of a woman 71 years old who suffered from a large growth on the left side of the larynx accompanied by great difficulty in swallowing and hoarseness. The appearance was distinctly malignant so that an unfavorable prognosis was given. Because of the patient's weakness and advanced age a total resection of the larynx was out of the question. He accordingly performed gastrostomy and there was striking improvement following this operation that in the course of a few months a complete cure could be substantiated. Syphilis had been ruled out; the condition was a perichondritis.

The author further calls attention to a group of new growths in the larynx which, notwithstanding that microscopically they are distinctly perfectly. The interesting point in these cases is that the constitutional state and the condition of the lungs combine with the appearances in the larynx to arouse suspicion. If to these laryngeal and pulmonary symptoms are added the fatigues of trench life, and if the man after months of privation has lost flesh, he will almost inevitably be taken to be suffering from tuberculosis. But the absence of bacilli from the sputum and the condition of the larynx should put the observer on the right path. When a correct diagnois is made, cure is, with proper treatment, a matter of a few weeks, and the man can return to duty. On the other hand, a wrong diagnosis causes long stays in one hospital after another, with pulmonary treatment which improves the bronchial condition, but also with a laryngeal therapy of fumigations, inhalations, wet compresses, and so forth, which has never alone cured laryngitis caused by wrong use of the voice. ED.

750

Angioma of the Larynx. EMIL MAYER, *Medical Record*, June 17, 1916.

A case report of this rare occurrence, the patient being a woman 52 years old. Chief complaint hoarseness of one year's duration. Six months before she had been hoarse for a time, had a profuse hemorrhage from her mouth and her hoarseness left her to return some months later. Some cough, no pain, attacks of dyspnea on slightest exertion. Diagnosed as cancer of larynx. Laryngotomy and excision of tumor under local anesthesia. Uneventful recovery. Sections showed the tumor to be a hemangioma. The great interest in a case of this kind lies in the diagnosis, especially on consideration of the danger with probably fatal consequences that may follow any attempt at removal of a portion for diagnostic purposes. The points that suggested to the author the true nature of the growth were the yielding character of the tumor to the probe and the history of an unaccounted for hemorrhage. Finally, from a consideration of the few recorded cases in the literature the author concludes that (1) angioma of the larynx is a rare disease occurring mostly in adults and the proportion of males to females is approximately four to one; (2) it may be mistaken for cancer; (3) endolaryngeal removal of a portion of the tumor for microscopic diagnosis or its complete removal in this manner is very dangerous; (4) laryngofissure, removal and suture of the mucosa are safe and feasible procedures. ED.

753

A Note on Treatment of Gunshot Injuries of the Larynx Where "Webbing" of the Vocal Cords Has Taken Place. W. MULLIGAN, Proc. Royal Soc. Med., Laryngol Sec., April, 1916.

Where there is a cicatrix uniting the cords to each other mere division is of little use. To prevent this the author has had an instrument made which consists of a tracheotomy tube with the inner tube slit down the greater part of its curve. The perpendicular rod is a screwed rod and on it revolves an equilateral triangle of metal with the sides grooved. The screw arrangement is passed down through a laryngeal spatula through the hole in the tracheotomy tube so that its bulbous end lies in the tube itself. The inner tube is then passed through the outer one, thereby fixing the perpendicular rod. By means of vision one judges when the cords are lying opposite the little grooves of the triangular papillomata, nevertheless pursue a malignant course. He reports a case of this character in a man of 52 years. Laryngofissure and energetic x-ray treatments and finally total resection of the larynx were ineffectual to prevent a fatal outcome, and yet at all times the tumors showed microscopically a benign papillomatous structure. A review of the literature on this subject is incorporated in the article. Ed.

782

Leukoplakia of the Vocal Cords. Herbert Tilley, *Proc. Royal Soc. Med., Laryngol. Section*, March, 1916.

Patient 52 years of age. No history of lues. Wassermann negative. Small smooth patch on right side of tongue suggestive of chronic superficial glossitis. No other stigmata of syphilis in throat or elsewhere From middle of upper surface of each cord and extending to within one-quarter of an inch of the anterior commissure a dead white patch could be seen identical in appearance with the plaques seen in a leukoplakic tongue. The plaque surfaces are flat, with no suggestion of ulceration, thickening or infiltration of the cords in the neighborhood of the patches. The fact that the condition is bilateral and that the cords are normal in the immediate region of the anterior commissure would seem to negative epithelioma. Ed.

791

Tracheobronchial Syphilis. H. Arrowsmith, *New York Med. Jour.*, June 24, 1916.

The author lays great stress on Dr. Conner's paper on this subject published in 1902, which comprised 112 cases, in 97 of which there was postmortem investigation. In this series dyspnea was the most constant and conspicuous symptom. Pain was noted only in three cases. Dr. Arrowsmith's observations comprise two cases. The first was in an Italian, married, 44 years old, who complained of shortness of breath and cough, with paroxysmal exacerbations of both, which first began to trouble him two and one-half months before coming under observation. No luetic history, personal or family, obtainable; history negative except that for an indefinite period he had had cough at night and two weeks before admission he had an attack of violent dyspnea and cough. The night before his admission (Nov. 10, 1915) to the hospital he had a return of these symptoms. Cardiac examination negative. Lung signs changeable and indefinite. Abdomen and extremities showed nothing noteworthy. The day after admission the patient had a violent attack of dyspnea in which he entirely stopped breathing for a minute and was resuscitated by means of a pulmotor. Similar, but less violent, attacks subsequently. An x-ray picture taken January 10, 1916, showed normal outline of the aorta and left side of the heart, with definite thickening at the root of the left lung. The right lung showed slight fogginess down to the fifth rib posteriorly with a rather ragged shadow to the right of the vertebrae at the level of the heart and extending out two inches. On January 19, direct laryngoscopy under oil-ether colonic anesthesia showed no lesion of the larynx. A 7 mm. Jackson bronchoscope was passed and a definite and symmetrical diminution of the lumen was encountered which required a certain amount of pressure to advance it. Considerable pressure was also required to enter the primary bronchi and the orifices of the secondary were only suggested. There was a decided unyielding resistance *outside* the mucous membrane. Diffuse indurative peritracheobronchitis with stenosis describes the condition found. The patient was placed on intensive mercurial treatment (salvarsan was not obtainable) with prompt response to the treatment so that by February 3, 1916, he was getting about with very little dyspnea. On February 22 he began to cough more and had a return of the dyspnea and his condition became rapidly worse. On March 1 he became unconscious and died. No autopsy was obtained.

In the second of Dr. Arrowsmith's cases the larynx was implicated to the extent of a decided thickening of the vocal bands with some superficial scarring and serration of their free borders. The tracheal mucous membrane was greatly congested, the upper rings ill-defined and in the lower two-thirds indistinguishable. On the posterior tracheal wall, about one inch above the carina, was sessible, fungating mass about the size of a pea. Energetic specific treatment cleared up all subjective symptoms. ED.

792

Absorption of Epinephrin After Intratracheal Injection. J. AUER and F. L. GATES, *Jour. Exper. Med.*, June, 1916.

In a normally breathing rabbit a simple intratracheal injection of a solution penetrates within a few seconds to the alveoli, chiefly those of the left lower lobe. Absorption is rapid and probably takes place largely through the capillaries of the pulmonary veins, to a slight extent perhaps through the capillaries of the bronchial veins which empty into the pulmonary veins; probably some absorption occurs also through the lymphatics. ED.

795

Primary Sarcoma of the Trachea. STURE BERGGREN, *Oto-Laryngologiska Meddelanden*, Br. 2, H. 2, p. 371, Aug., 1916.

The author reports a case of primary sarcoma of the trachea in a man, 50 years of age. The tumor was situated in the upper portion of the trachea, on the anterior wall, and was about the size of a hazel nut. Microscopic examination showed it to be a small round cell sarcoma. It was removed by tracheofissure and examination four months after operation showed no recurrence of the growth. The author appends a review of the cases collected from the literature, numbering altogether twenty. ED.

811

Respiratory Affections in the War. H. HOCHHAUS, *Deutsche mediz. Woch.*, Sept. 21, 1916.

Chronic bronchial affections were difficult to manage as new exacerbations constantly followed exposure. Asthmatic catarrh proved exceptionally rebellious. Long bed rest and medication were necessary to restore approximately normal conditions, and a return to service, even to garrison duty, speedily brought on severe relapses, so that the men had finally to be dismissed from the army. It seems wiser not to pass asthmatics for military service, even although the men may happen to feel well at the time. Two of these men with asthma and chronic bronchitis had repeated attacks about every two weeks, with high fever, sweats, cyanosis, dyspnea and rapid pulse. These attacks lasted only for a few days, and then the symptoms subsided completely until the next attack, the intervals gradually lengthening. He noticed that men with an old healed apical process seemed to be especially susceptible to "catching cold." Ed.

814

Tracheobronchitis Due to Nitric Acid Fumes. Chevalier Jackson, *New York Med. Jour.*, Nov. 4, 1916.

A man, 35 years old, previously in good health, was admitted to the hospital complaining of burning in the throat following a two hours' exposure to nitric acid fumes. Half an hour after exposure his lips became blue and five hours later patient fell, becoming unconscious for a few minutes. Then cough, difficulty in breathing and cyanosis of lips and face were noted. Sibilant and subcrepitant rales all over both lungs anteriorly and posteriorly. By indirect laryngoscopy frothy mucous could be seen bubbling up and down in the trachea; no cough reflex. By bronchoscopy, acute tracheitis and bronchitis. Patient at times unconscious. Tracheotomy performed. Secretions continually wiped out. At the end of the fourth day patient could cough out the secretions through the cannula. The author remarks that where the patient is drowning in his own secretions tracheotomy should be done in order to give easy access to the lower air passages for the frequent removal of secretions provided the basic condition is curable and is not a fatal illness (thoracic cancer, aneurysm, etc.). Ed.

815

Bronchospasm. N. von Jagic, *Wiener klin. Woch.*, Jan. 27, 1916.

The article deals with the influence of epinephrin on bronchospasm and asthma. The author has also been using epinephrin in dyspnea from other causes, even in elderly patients. The effect of the injection in cases of asthma is very prompt. Within half an hour after the injection, in an acute attack of asthma, the patient is able to return to work and remains free from any further asthmatic attacks for a long time. In mild cases the author prescribes the epinephrin in suppositories. Where there is secondary emphysema digitalis may have to be prescribed for stimulation of the heart because the action of the epinephrin is directed merely on the bronchospasm and the diaphragm. In acute emphysema the excursions of the diaphragm are very short and in the author's experience, when this was corrected by epinephrin the relief was so great that it demonstrated the importance of this and of bronchospasm in emphysema, whatever its cause. Ed.

819

Tuberculosis of the Bronchial Glands. Mary E. Lapham, *New York Med. Jour.*, Oct. 21, 1916.

In tuberculosis of the bronchial glands if the mediastinal structures sufficiently adapt themselves to the gradually increasing size of the glands there may be no pressure symptoms. The syndrome of tuberculous toxemia is the same as that from the lungs. The septic manifestations, pulse, chills, temperature and sweats are the same as in other septicemias. In less violent types, in which septic symptoms do not appear, there is a tendency towards concealment although the pulse and temperature may be sufficiently characteristic to lead to a correct diagnosis. A pulse of ninety-six with a history of loss of strength and inability to work is suspicious. The temperature is frequently not above 99. Among the possible consequences of tuberculosis of the bronchial glands are meningitis, tracheobronchian stenosis, laryngeal disturbances, erosion of the esophagus, trachea, bronchi and blood-vessels, tuberculous peribronchial infiltration of the lungs, etc. Ed.

828

Paratyphoid Involvement of the Bronchi or Lungs. J. Minet, *Bull. de l' Acad. de Med. de Paris*, Feb. 15, 1916.

Four cases, two acute and two chronic. Of the former, one was a case of acute bronchitis, the other a case of acute congestion of the lungs, in which paratyphoid bacilli were found in the sputum. Both cases recovered. In one of the chronic cases the bacilli were of the A type; in the other of the B type. There was progressive emaciation and the clinical picture was that of chronic phthisis. The paratyphoid bacilli were present in the sputum in pure culture. The patients, after months of illness, finally recovered. Ed.

830

Roentgen Diagnosis of Bronchiectasis. Alexander B. Moore, *Amer. Jour. Roentgenology*, Nov., 1916.

The Roentgen rays not only furnish us with most valuable information in the diagnosis and differential diagnosis of bronchiectasis, but also in a large percentage of these cases offer us the only means of ascertaining the true nature, extent and location of the affection; such information being absolutely essential in the selection of the course of treatment to be pursued.

Roentgenologically Moore recognizes three types: The infiltrative, the cylindrical and the sacculated. These three forms most probably represent different stages of the disease and show the existence of gross changes that have been demonstrated by pathologists.

The first or infiltrative type appears in the roentgenogram as a more or less stringy increase in density along the course of the bronchi, usually localized in the lower pulmonary lobes and radiating outward from the hilus to the periphery of the chest and extending into the costophrenic angle.

The infiltrative stage is followed by the cylindrical type. There is the characteristic mottled increase in density, extending outward along the course of the bronchi, producing a more or less fan-shaped shadow. The density is usually greatest near the hilus and, distributed throughout this density, one or more areas of diminished density may be located. These areas are more or less clearly circumscribed and are produced by the so-called pseudo-cavitations of bronchiectasis which are dilated bronchioles that have been emptied of their secretions. The visualization of these cavitations depends largely on the ability of the patient to empty the bronchi of secretion, and their presence is pathognomonic of the disease.

The third or sacculated type of bronchiectasis is characterized roentgenographically by the localization of distinct pseudo-cavitations surrounded by dense fibrous tissue. These cavitations are practically always multiple and larger than those encountered in the cylindrical type. They vary in size from that of a bean to that of a walnut and have a thin wall. The section of a lung involved by the sacculated type of bronchiectasis very strongly resembles a bunch of grapes cut through the center. The fibrous tissue surrounding these groups of sacculations is very dense. It may be so dense and the cavitations may be so filled with secretion that the shadow in the roentgenogram is almost homogeneous and the diagnosis difficult. However, the true condition is usually revealed by emptying the cavities.

Differential Diagnosis.—The more common conditions from which bronchiectasis must be differentiated roentgenographically are chronic purulent bronchitis and lung abscess. Ed.

835

Experimental Study on the Use of Apomorphin to Remove Foreign Bodies from the Respiratory Passages. D. de la Paz and F. Garcia, *Philippine Jour. Science*, Jan., 1916.

This study seems to show the possibility of removing foreign bodies from the trachea by the use of apomorphin. As a matter of fact, a foreign body below the larynx may be forced farther down during the early stage of vomiting because of the descent of the diaphragm and closure of the glottis which in turn cause a rarefaction of the air in the thoracic cavity and a rushing of the air into the deeper parts of the lungs. Ed.

837

X-Ray Diagnosis of Surgical Complications Within the Chest. G. E. Pfahler, *New York Med. Jour.*, June 17, 1916.

The author points out the value of the x-rays in diagnosis of aneurysm, atheroma of aorta, sarcoma, lipoma, carcinoma, thymic enlargement, thoracic goiter, abscess, gangrene and tumors of the lungs, bronchiectasis, foreign bodies and tumors in the larynx, trachea and bronchi. Ed.

848

Rupture of the Trachea in Tetanus. A. Walcher, *Munchener mediz. Woch.*, No. 19, 1916.

A case report in which rupture of the trachea occurred as a result of excessive expiratory pressure caused by spasm of the glottis in tetanus. There was immediate subcutaneous emphysema in the left supraclavicular fossa which soon spread to the neck, necessitating an immediate tracheotomy. Ed.

858

Foreign Bodies in the Esophagus. Edmund Boyd, *Canadian Practitioner and Review*, Sept., 1916.

This is a digest of three years' experience in the Hospital for Sick Children. The writer finds that by far the greater number of bodies were found at a point 1½ to 2 inches below the level of the cricoid, on a level with the inner ends of the clavicles and opposite the first or first and second thoracic vertebrae. In only two cases was a foreign body found behind the cricoid, and the reason why these did not penetrate as low as the others was on account of size. This experience is contrary to the lodging-places pointed out as usual in text-books. The author enters into an interesting explanation as to the reason why bodies lodge at this site.

The author has devised a special supporting frame with an adjustable leather sling to support the head and neck, and the suspension method was utilized. Ten cases are given in detail. WISHART.

876

Foreign Bodies in the Esophagus, Trachea and Larynx. FRITHIOF LEEGARD, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Bd. 1, No. 1, p. 47, 1916.

The author mentions 15 cases of foreign bodies in the esophagus (1 metal button, 1 horn button, 3 plum stones, 1 piece of meat, 1 piece of bone, 4 tooth-plates, 1 metal toy wheel, 1 silver coin, 2 chicken bones), one case of foreign body in the trachea (coffee bean) and one case of foreign body in the larynx (bone). In ten of the cases the foreign body was removed (Brüning's instruments) while in the other five cases it descended into the ventricle and passed out per rectum. Detailed reference is made to the diagnosis of foreign bodies in the gullet by means of Roentgen rays. The author has carried out experiments on himself in an endeavor to throw light on this question and placed various objects in his own esophagus and then took photographs of his thorax. Some of the objects were photographed 20 cm. and others 25 cm. from the teeth. In the recapitulation of these experiments it is pointed out that objects of rubber and vulcanized caoutchouc give a distinct image on the Roentgen plate. Glass objects also appear clearly even if comparatively small. In the case of bony objects, especially bone buttons, diagnosis is more difficult. With all kinds of foreign bodies it is easier to obtain a positive result when the substance has passed the upper part of the gullet and entered into the comparatively transparent region between the columna and the heart, the foreign body being more easily hidden in the upper part of the gullet, especially by the clavicle. ED.

893

Asthma; Its Cause and Treatment. W. W. EWBANK, *Med. Jour. Australia*, July 22, 1916.

The exciting cause of asthma is always in the nose and behind this there is some predisposing cause which has not yet been determined, perhaps it is due to a want of balance of some of the endocrinous glands. Asthma spots are hyperesthetic nerve endings, sometimes darker and sometimes paler than the surrounding mucous membrane, occurring mostly in the region of the middle turbinate. There may be eight or ten on each side. The author strongly condemns the use of the cautery in the nose for conditions associated with asthma. He states that it will not destroy the asthma spots which, furthermore, get hidden under the cautery scars. All his operations are done with cutting instruments. Treatment is tedious and may take six or eight months to effect a cure. In five hundred cases operated there were 82 per cent of cures and many of the others obtained a reasonable amount of relief. ED.

898

Elective Localization in the Bronchial Musculature of Streptococci from the Sputum of Cases of Bronchial Asthma. S. OFTEDAL, *Jour. Amer. Med. Assn.*, May 27, 1916.

This paper deals with the question of the bacterial etiology of bronchial asthma. Experiments on lower animals consisting of intravenous injections of cultures made from the sputum of asthma patients are detailed in which the microscope showed marked distention of the aveoli and thinning and frequently rupture of the aveolar walls. A very marked change was seen in the bronchioles which were contracted as if in spasm, the mucosa being thrown into folds almost obliterating the lumen. In the substance of the musculature a considerable number of streptococci were found. To rule out a general bacteremia cultures from the blood and other body fluids were made, and also of other viscera than the lungs, but nearly in every case the blood and all organs except the lungs were found to be sterile. Ed.

899

Autogenous Defibrinated Blood in the Treatment of Bronchial Asthma.

Kuhn and Emsheimer, *Arch. Internal Med.*, Oct., 1916.

The writers were led to their method of treatment by the following consideration: Bronchial asthma is due to sensitization by a foreign protein, therefore, the repeated subcutaneous injection of this protein in small doses should lead to immunization and thus to a cure of the disease. Although the protein responsible may vary in different cases and cannot be definitely determined the assumption is, however, that it is present in the patient's blood either just before or during an attack; hence, blood is withdrawn from the patient at this period, defibrinated and injected subcutaneously. Six cases treated by the authors with this method all showed definite improvement (diminution in frequency and severity of attacks and gain in weight and strength). Ed.

901

Role of Pyorrhea Alveolaris in the Causation of Chronic Bronchitis and Asthma.

S. P. Shivdas, *Practitioner*, April, 1916.

Cases are cited by the author to show that pyorrhea alveolaris is an etiologic factor in these diseases. Cases in which the pyorrhea alone was treated showed either a marked improvement or a disappearance of the lung affection. On the other hand, treatment of the lung affections without attention to the pyorrhea was productive of very little results, except whatever relief could be ascribed to the anodyne remedies that were administered. When both the lung affections and the pyorrhea were treated the asthma and bronchitis either entirely disappeared or showed very marked improvement. Ed.

913

Foreign Bodies in the Respiratory Tract.

N. W. Green *and* L. T. Le Wald, *Annals of Surgery*, June, 1916.

Conclusions: (1) All recently aspirated foreign bodies should be first sought by the Roentgen ray and the bronchoscope and removed, if possible, through the mouth. (2) Failing to remove them through the mouth a tracheotomy should be done and another attempt made by means of the bronchoscope. (3) Failing in this the tracheal wound should be held widely open by wires or a large tube in the hope that the foreign body may be coughed out. (4) If immediate removal by these methods fail a period generally elapses in which the patient may undergo secondary changes in the lung, such as pneumonia, gangrene, abscess and generally an overlying empyema. (5) If the patients recover from these acute infections, they pass into the class of deferred cases with the foreign body still present as an aggravating factor in their chronic lesion. (6) Removal of the foreign body in these deferred cases does not always effect a cure. (7) The lung abscess must be treated along surgical lines and even then we cannot always hope for a cure, but rather an amelioration of the affliction. Ed.

938

A Modified Gram Stain for Diphtheria. Albert Albrecht, *Jour. A. M. A.*, Nov. 11, 1916.

The staining solution consists of the following:

Saturated alcoholic solution of gentian violet	25 c.c.
Five per cent dilution of liquor formaldehydi	75 c.c.

and is to be used according to these directions:

1. Stain with the foregoing gentian violet stain for two minutes.
2. Flood preparation with one-half strength Gram's iodin solution for one and a half minutes.
3. Immerse slide seven or eight times in a jar of 95 per cent alcohol.
4. Counterstain with saturated aqueous solution of Bismarck brown for four minutes.
5. Wash in water and examine.

The Klebs-Loeffler bacillus, when stained according to this method, appears as a brown rod, and the metachromatic granules are stained a deep violet. In other words, the bipolar granules alone remain gram-positive.

A single diphtheria bacillus can quickly be seen in a field with numerous other kinds of organisms.

The picture is that which we are supposed to get with Neisser's stain, but the organisms are stained more deeply, and the results are more constant. Ed.

956

Gangrene of the Leg Following Diphtheria. E. B. Gunson, *British Med. Jour.*, Aug., 1916.

A boy of six years was admitted to the hospital with severe faucial diphtheria on the fourth day of the disease. Twenty thousand units of antitoxin were given on admission and again on the following day. Cardiac weakness and irregularity appeared on the eleventh day. On the seventeenth day there was increase in cardiac dullness and also triple rhythm on auscultation. The liver extended three inches below the costal margin. The following day the patient complained of pain in his right leg, which later became discolored, and the limb was tender to palpation. On the twenty-second day dry gangrene of the right small toe developed and by the thirtieth day the whole leg was in a state of dry gangrene. On the thirty-fourth day of the disease palatal paralysis occurred. Three days later pharyngeal paralysis developed. The diaphragm was acting feebly. During the next fortnight the patient's general condition slowly improved. Strength gradually increased until by the seventy-first day of the disease the boy was able to undergo an amputation at about the middle of the thigh. It was found that the popliteal artery was completely occluded by a thrombus. Further recovery was uneventful. Ed.

957

Throat Operations in Diphtheria Carriers. THOMAS HUBBARD, Trans. American Laryngol. Assn., p. 57, 1916.

The author states that when confronted with the problem of throat operations in diphtheria carriers two questions come up: (1) whether the operation is contra-indicated in throat and nasal chambers infested with diphtheria bacilli, and (2) the condition of the patient for tonsillectomy or adenoidectomy. The very fact that the patient is a healthy carrier, no matter how virulent the bacilli may be, shows that perfect immunity is established and that there is no more danger from the diphtheria bacilli than from the ordinary germs present in all other cases. Furthermore, the Schick test can determine the immunity towards diphtheria at the time of the proposed operation. The secondary group, cases that were not primarily immune but have had clinical diphtheria in more or less severe form, are not as a rule ideal surgical subjects. It may be necessary to prolong isolation until convalescence is well established before undertaking any surgical measures. ED.

964

Treatment of Diphtheria Bacillus Carriers. M. LABBE and G. CANAT, *Bull. et Mem. de la Soc. Med. des Hopitaux*, July 13, 1916.

Twenty-nine patients were treated daily with two copious irrigations of the throat with a 3 per cent mixture of Labarraques solution in water; introduction of a 10 per cent resorcinol ointment into the nasal fossae morning and evening and, in some instances, the application of 1:30 iodo-glycerine to the throat. In 24 of these cases the bacilli disappeared in from fifteen to forty-eight days, in 4 on the ninetieth day and 1 was lost track of but who still showed the presence of bacilli on the seventy-fifth day. Another series of 35 cases were treated by powdered dry serum which was blown into both nostrils four times daily. In this series disappearance of the bacilli occurred in from nine to sixty days, except in one case in which the disappearance was noted after ninety-five days. From the fact that in some cases there was disappearance of the bacilli after an initial serum treatment, followed by return upon the cessation of the serum and disappearance upon resumption of the serum the authors believe that there is evidence of a specific action of the serum. ED.

965

To Hasten Bacteriologic Diagnosis in Diphtheria. H. LANGER, *Munchener mediz. Woch.*, No. 38, Sept. 19, 1916.

Diphtheria bacilli can be decolored with alcohol much more rapidly than pseudodiphtheria bacilli. The author uses brilliant green as a stain instead of gentian violet and after-stains with dilute fuchsin, which shows up the bacilli especially distinctly. ED.

978

Nasal Diphtheria. K. OCHSENIUS, *Munchener mediz. Woch.*, Oct. 10, 1916.

In the course of nine months, in private practice, the author encountered 32 cases of pure nasal diphtheria. The majority of the children were from 2 to 6 years old. In 88 per cent one side of the nose was at first alone affected. Two of the children developed diphtheria in the

other side of the nose after an interval of five and ten weeks. A tendency to repeated but slight hemorrhages was present in every case. Formed membranes were only rarely expelled. The course was always favorable.
Ed.

982

The Problem of Diphtheria Carriers. Sophie Rabinoff, *Jour. Amer. Med.* Assn., Dec. 9, 1916.

The author gives her experience with the treatment and care of diphtheria carriers in an institution caring for about 400 children under 5 years of age. All have been subjected to the Schick test in a routine way previously so that there was a record of susceptibles and nonsusceptibles. Several cases of diphtheria occurred among the children, as well as among the attendants, and the patients were promptly isolated, while nose and throat cultures were taken of every one in the institution. As the immunity conferred by antitoxin is only temporary, lasting about three weeks, efforts were directed to the prompt elimination of carriers to prevent further exposure to susceptibles. In the beginning they were either isolated or placed in dormitories with children shown by the Schick test to be immune. Only those were considered carriers who furnished two successive positive cultures. Local treatment was rigorously carried out, but there was a group of resistant patients which continued to show the bacilli over a long period of time, or in whom the cultures after becoming negative became again positive after stopping treatment. They have, therefore, continued to follow up discharged patients and have observed them from two to six months. Local treatments all failed to give satisfaction, and Fuller's earth blown into the nostrils according to the method suggested by Rappaport and Hektoen only gave good results in adults. It was finally decided to remove the tonsils and adenoids in all cases in which the organisms persisted, taking small groups at a time and continuing to make cultures, pending operation. Up to the present time they can report only a small group, ten in all, but the results are so promising that they feel justified in proceeding with this method. The patients follow the usual course following tonsillectomy. After the membrane which forms at the tonsillar incisure has disappeared, the cultures invariably become negative, the results being similar to those reported by Ruh, Miller and Perkins (*Journal A. M. A.*, March 25, 1916, p. 941). They conclude that removal of tonsils and adenoids seems to offer a safe and rapid method of eliminating diphtheria bacilli from the nose and throat of carriers and should be resorted to when other methods fail.
Ed.

985

Laryngeal Diphtheria in Adults. J. D. Rolleston, *Clinical Jour.*, Nov. 1, 1916.

Rolleston points out, first, that the affection in adults is very rare. Of 11,313 patients admitted to the Grove Hospital in London during a period of 16 years, 1,156 were suffering from laryngeal diphtheria, including four adults. He admits that a routine laryngological examination would probably have discovered other cases in which the larynx was involved, but he is willing to limit himself to cases in which adults showed signs and symptoms of true laryngeal diphtheria. Dyspnea did not make its appearance until later in the disease, if at all. The most striking symptoms were extreme prostration and intoxication. Of the four adult patients one recovered. Because of the fact that the condition is not recognized, without laryngeal examination until late, antitoxin is usually of small avail. The early symptoms in the adult may include sore throat, vomiting and cough. Aphonia is comparatively rare. ED.

987

Studies in Diphtheria: The Treatment of Diphtheria Carriers by Tonsillectomy. H. O. RUH, M. J. MILLER and R. G. PERKINS, *Jour. Amer Med. Assn.*, March 25, 1916.

The removal of tonsils (and adenoids) is an effective method of eliminating diphtheria bacilli in carriers. After the post-operative membrane has disappeared cultures from the throat are invariably negative. ED.

988

Cerebellar Ataxia After Diphtheria. SEROG, *Medizinische Klinik*, No. 48, Nov. 26, 1916.

Report of a case in an adult. Large doses of antitoxin were necessary to control the diphtheria and in the course of the disease there was marked psychic disturbance and bilateral paralysis of the palate. This cleared up but there developed paralysis of accommodation, muscular hypotonus, absence of tendon reflexes in the legs, extremely marked ataxia and definite bullar speech. The patient made an incomplete recovery. ED.

989

Therapy of Nasal Diphtheria.. DR. SCHWERIN. *Munchener mediz. Woch.*, Nov. 14, 1916.

The author asserts that routine antitoxin treatment in nasal diphtheria is all right for the protection of other children, but in the treatment of these cases (40) he did not invariably pursue this course. In the majority of cases he introduced white precipitate ointment into the nostrils and the clinical results were very good, and within a short time the nasal secretions were found to contain no bacilli. Only where the temperature was high did the author use antitoxin. Nasal diphtheria is in the great majority of cases a benign affection, either the bacilli are of low virulence or the blood contains a great amount of antibodies. ED.

1009

Ambulatory Types of Thyroid Disease. ELEANOR BERTINE, *Medical Record*, Nov. 18, 1916.

Of 134 cases of thyroid disease, there were: (a) Nine simple goiters; (b) sixty-five cases in which stimulation from excessive thyroid activity was clinically the chief feature; (c) twenty-seven cases in which depression, physical and mental, was the chief feature; (d) thirty-three cases in which there was a mixture of stimulation and depression.

Simple quantitative change in thyroid secretion is inadequate to explain groups b and c, but the cause must be sought in some at present ill-understood inco-ordination between several endocrine glands. Hence of 134 cases of thyroid disease, at least 60 present features of a complex endocrine disturbance. ED.

1013

Clinical Value of Metabolic Studies in Thyroid Cases. W. M. Boothby, *Boston Med. and Surg. Jour.*, Oct. 19, 1916.

In normal persons the basal metabolism rarely varies more than 10 per cent from a normal figure, depending upon age and sex, when compared by surface area determined by DuBois height-weight curve. In conditions of thyroid overactivity the metabolism may increase to 100 per cent above normal and in underactivity it may decrease to 50 per cent below normal. Ed.

1016

Conditions Affecting Secretion of the Thyroid Gland. W. B. Cannon, *Boston Med. and Surg. Jour.*, Oct. 19, 1916.

If the thyroid gland and the neighboring indifferent tissues are connected with a galvanometer, stimulation of the sympathetic strand high in the thorax evokes an action current after a latent period, varying usually between five and seven seconds. The internal secretion of the adrenal gland, or adrenin, will have the same effect in the body as sympathetic nerve impulses. Stimulation of the nerves to the adrenal glands, causing their secretion to be poured into the blood stream, will evoke a characteristic electrical change in the thyroid, thus establishing the influence of adrenal activity on the thyroid. Ed.

1020

Operative Results of Exophthalmic Goiter. Vernon C. David, *Annals of Surgery*, Oct., 1916.

Of 65 patients operated for exophthalmic goiter from 1905 to 1914, inclusive, 38 per cent were cured and 40 per cent were greatly benefited. Of 35 patients having exophthalmos before operation only 13 or 37 per cent reported themselves relieved from it. The duration of the symptoms in the patients cured was sixteen months, in those greatly benefited was twenty-three months and in those not improved was thirty-three months. Ed.

1021

Goiter; An Analysis of 137 Cases. C. N. Dowd, *Jour. Amer. Med. Assn.*, Feb. 12, 1916.

For mildly toxic patients operation is very satisfactory and when the toxic symptoms develop in connection with free existing goiter, cure is almost certain. When they develop in the early stages of the growth, cure is usually obtained but cannot be so confidently predicted. The operation may be by partial thyroidectomy, cyst enucleation, artery ligation or boiling water injection, according to the case. Advanced exophthalmic goiter presents the most difficult problems. Many elements must be considered, including the complex nature of the ductless glands, their interrelations and chemical influences from other parts of the body and the various therapeutic measures which interrupt this vicious chain of disturbance. The hyperplastic thyroid seems to cause many of the symptoms and is the organ most easily attacked. The treatment consists largely in the endeavor to control its overactivity. Rest is an important element. Boiling water injections have an undoubted influence, and can be used for patients too ill for other measures. The ligation of the thyroid arteries is also beneficial and can be used as a preliminary measure or substitute for hemithyroidectomy. Partial excision of the gland must be considered a most reliable therapeutic measure, but the administration of drugs and the animal extracts may be beneficial. A choice of method should depend on the condition of the patient and, if rightly made, nearly all the patients can be improved. Ed.

1022

Roentgen Exposures in the Treatment of Exophthalmic Goiter. J. F. Fischer. *Ugeskrift for Laeger*, Oct. 5, 1916.

The author remarks that Roentgenotherapy seems to be far more effectual than all other measures combined, except the operative, in the treatment of exophthalmic goiter. Assuming that this disease is the result of excessive thyroid secretion it seems logical because the Roentgen rays have a destructive action on the gland. Furthermore, Roentgenotherapy is comparatively harmless, while operative measures show a mortality of 5.4 per cent (Bruno-Glaserfeld) or 6 per cent (Hildebrand). Fischer has treated by Roentgenotherapy 94 exophthalmic goiter patients, and 37 were simple goiter. Ages, 14 to 67. Only two in the Basedow group were men. As a rule the affection was of from one to four years standing. A complete subsidence of all objective and subjective signs and symptoms of the exophthalmic goiter was realized in 15 cases. The thyroid subsided to normal size in twenty-two, but in fully two-thirds of the cases it became much reduced in size. The exophthalmos was the most refractory symptoms, subsiding completely in five and showing improvement in eighteen. Ed.

1032

The Cerebral Nerve Disturbances in Exophthalmic Goiter. G. J. Heuer, *Amer. Jour. Med. Sciences*, March, 1916.

A young physician, 23 years old, of nervous temperament and a history of several recurrent attacks of vomiting without nausea and occasional diarrhea over a period of some years, was admitted to the hospital suffering with well marked Basedow's disease. He presented on examination the classical symptoms; drooping lids, protruding fixed eyes, mask-like face, open mouth and hanging jaw, with extreme exophthalmos, greatly enlarged thyroid and a moderate tachycardia.

Examination of the cerebral nerves revealed the following: Smell and taste fairly normal. Complete bilateral ptosis of the eyelids, complete paralysis of the third, fourth and sixth cerebral nerves. The sensory part of the fifth nerve seemed unimpaired, but the motor part was markedly involved, the open mouth and hanging jaw being apparently due to weakness of the muscles supplied by that nerve. Seventh nerve: Facial weakness manifest on both sides. Eighth nerve: No disturbance of hearing. The dyspnea, marked difficulty in swallowing and regurgitation, together with other signs, gave clear evidence of bulbar paralysis.

The patient at first refused, but finally consented to operation, which, on account of his serious condition, was limited to ligation of the superior thyroid arteries. He died the day after operation. No autopsy was obtained. Ed.

1036

Results of Operations for Exophthalmic Goiter. E. S. Judd and J. S. Pemberton, *Surg., Gyn. and Obstet.*, March, 1916.

The first change noted as a rule is in the subjective symptoms. Many patients will state of their own accord and within two or three days, even before the pulse has changed much in frequency, that the feeling of pounding of the pulse in the precordium and head has been very materially lessened.

Exophthalmos as an objective symptom, though improved, has not in any of the cases totally disappeared but the patients in a short time may feel much less fulness in the eyes and feeling of protrusion.

Gain of weight has begun in a few weeks and has often been very marked. A girl of fourteen increased in weight from eighty-nine pounds to one hundred and fifteen pounds in the first few weeks. Usually the excessive early gain in weight has not been maintained but the weight remains at a point above that before operation.

Some of the symptoms are more directly traceable to the excess of thyroid secretion in the blood than others. These may be expected as a rule to show very considerable improvement. The improvement in exophthalmos and nervous control is much less marked. Most of the patients still have a pretty unstable nervous makeup. They are easily moved to tears and are much more easily upset by family quarrels or business troubles than the average person, even though their other signs of hyperthyroidism have disappeared. Physical strength is often remarkably restored in striking contrast to the nervous control. Ed.

1037

Goiter and Melancholia. B. D. G. Kappenburg, *Nederl. Tydschr. voor Geneeskunde*, Sept. 30, 1916.

Of the fifty-six persons with goiter at the Utrecht Hospital 20 per cent presented more or less pronounced mental impairment, while only 4.4 per cent of 437 other inmates showed any mental derangement. Of the 20 per cent nearly all were of the melancholic types of psychoses. Ed.

1040

Recent Advances in Our Knowledge of the Active Constituent in the Thyroid: Its Clinical Nature and Functions. Edward C. Kendall, *Boston Med. and Surg. Jour.*, Oct. 19, 1916.

The author refers to the crystalline substance isolated by him. This is a 60 per cent iodine compound which, when administered in small quantity in cases of cretinism and myxedema, gave results entirely equal to that of thyroid extract. In large doses, however, it gives rise to toxic symptoms simulating exophthalmic goiter. The effect of the compound does not make its appearance until several hours after its administration. There is no fall in blood pressure or increase in the pulse rate, except if amino-acids are injected simultaneously. Ed.

1048

Exophthalmic Goiter. H. Mackenzie, *Lancet*, Nov. 11, 1916.

The author believes that 25 per cent of all cases of Graves' disease terminate fatally; 50 per cent under ordinary medical treatment attain more or less complete recovery in the milder types of disease, and in the remainder the disease is chronic. As to the value of various remedies in goiter, bromides proved useful where nervous symptoms were only marked; belladonna seemed to quiet the heart and nervous system; calcium salts and phosphates were found to be beneficial when there was progressive loss of weight. The author's experience with operative treatment has been unfavorable. Fifteen cases in which ligation was performed gave a mortality of 20 per cent, and nineteen cases in which thyroidectomy was performed gave a mortality of 42 per cent. Ed.

1054

Exophthalmic Goiter. A. J. Ochsner. *Annals Surgery*, Oct., 1916.

The author considers that surgical treatment of exophthalmic goiter begins after it has been established that medical treatment cannot permanently cure the patient. He believes that thyroid extract, digitalis, and iodine should never be used in the medical treatment of the disease. He believes he has seen deaths directly attributable to the use of each of these drugs.

When operation is decided upon, selection of the proper time to operate is of the utmost importance. Operation is never advisable during exacerbation, and an operation should not be undertaken if the patient expresses fear of it. The amount of surgery done at one sitting should be limited to the amount of surgery the operator deems safe for the patient, which varies from ligation of one vessel to double lobectomy. The author prefers the regular horseshoe incision even for ligation of vessels, as it permits ligation of the anterior thyroid veins in addition to ligation of both superior and inferior thyroid arteries on the side of the gland most affected. The injection of boiling water into the gland of patients too severely toxic to stand even a ligation has proved valuable in the limited number of cases where tried. No matter what the preliminary operation, the patient should receive the same careful after-care as though the radical operation had been performed; the latter should always be done when the patient has received the maximum benefit from the preliminary operation and should never be omitted because of an apparent cure.

Ochsner believes that the margin of safety for the excision of the gland can be enormously widened by a transfusion of 400 to 600 ccm. of blood at the beginning of the operation. In regard to anesthetics, he believes that ether by the open drop method is the only safe method for general use. Morphine and atropine are given one-half hour before the anesthetic. The patient is fully anesthetized, the head of the table raised, and no more anesthetic is given after the operation is started. Before the patient is returned to bed, if there have been marked symptoms of hyperthyroidism, stomach lavage with water at 110° F. is performed to eliminate mucus in the stomach, which the author believes is a predisposing factor in postoperative hyperthyroidism. Local anesthesia—0.5 per cent novocaine plus adrenalin—will entirely eliminate the danger of the anesthesia. It also limits trauma to the minimum. Hemorrhage should be prevented by clamping all vessels between two forceps before cutting. The wound should be drained.

Injury to the recurrent laryngeal nerve and to the parathyroids can certainly be avoided by ligating the inferior thyroid arteries anterior to the posterior thyroid capsule, the latter being allowed to remain undisturbed in its relation to the trachea. Ed.

1055

Some Functions of the Thyroid and Their Relationship to Goiter. Sydney Pern, *Med. Jour. of Australia,* June 17, 1916.

The author first discusses the hyperactivity of the thyroid which takes place in the presence of toxemia or a focus of infection in some part of the body. In thyrotoxic goiters infections have been found in the tonsils, nasal accessory sinuses or teeth. He believes that in the large majority of goiters some focal infection is present and he has found that when the infective foci is located and removed the thyroid responds to medical treatment. In fact in his own cases he has not had to remove a single gland. He then discusses the vaso-dilatory function of the thyroid and finally the influence of this gland on calcium salts metabolism (this function being shared by the parathyroids). Insufficiency of lime salts leads to goiter. Ed.

1058

Treatment of Exophthalmic Goiter by the Roentgen Rays. G. E. Pfahler and J. D. Zulick, *American Jour. Roentgenol.*, Feb., 1916.

When the x-ray treatment is used the pulse rate will show a reduction in nearly all cases. Next to this the weight shows a marked increase. The sleeplessness, excitability and headache all show early improvement. The exophthalmos shows improvement in 50 per cent of the cases treated. The size of the goiter is diminished in 20 per cent of cases.

Since the thymus gland is enlarged in 50 to 90 per cent of cases it is best to treat this gland in addition to the goiter applications.

The effect of the rays on the enlarged thymus is prompt and effective. At no time should the dosage be carried to the extent of reddening the skin.

With a Coolidge tube, a spark gap of 9 inches, 5 milliamperes of current for five minutes is a dose. The series of doses should not be repeated within three or four weeks. Ed.

1061

Surgery of the Thyroid Gland. C. A. Porter, *Boston Med. and Surg. Jour.*, Oct. 19, 1916.

An analysis is made of 185 cases. In the author's opinion partial lobectomy is a more severe and bloody operation than hemithyroidectomy, but he feels that it is followed by more immediate improvement and that the danger of recurrence is less. Of these 85 cases operated upon 20 are absolutely cured, 18 much improved, 4 not improved, and requiring further operation; 16 have not reported. Ed.

1062

The Surgical Treatment of Goiter. Miles F. Porter, *Annals of Surgery,* Oct., 1916.

The author discusses the question of how to improve upon the results achieved in the surgical treatment of goiter and states that there are three sources of dissatisfaction following thyroidectomy: (1) Failure to get relief from the symptoms although there is no recurrence of the goiter; (2) the immediate mortality is too high; (3) too many cases are seen which have gone beyond the point where the question of surgical relief can be entertained with reason.

The first cause of failure or partial failure can be avoided quite often by making a liberal incision and exposing the whole gland before commencing its removal. Perhaps in the majority of cases, by careful examination of the gland after uncovering it, it is possible to distinguish the hyperactive or toxic portions of the gland from the normal portions (the former are lighter in color, yellowish white rather than red and not so firm as the normal gland structure) and all the pathological tissue should be removed.

The immediate mortality of operation can be reduced by substituting boiling water injections into the gland for ligation as a preliminary to thyroidectomy in serious cases and by using the injections to the exclusion of all other methods in mild cases with little or no enlargement of the thyroid and in extremely serious cases. There is a so-called inevitable mortality but this could be reduced by removing all simple goiters before they become toxic or malignant. Ed.

1071

Roentgen Treatment of Exophthalmic Goiter. C. A. Simpson, *Southern Med. Jour.*, Oct., 1916.

A large percentage of cases of exophthalmic goiter are associated with enlarged thymus which many surgeons, to avoid dangerous post-operative symptoms and even death, advise resecting at the same time the thyroid is removed. This must greatly prolong and complicate the operation of thyroidectomy in patients generally regarded as bad operative risks. The Roentgen ray will quickly and painlessly atrophy the thymus and for this reason should be the method of choice in all cases of exophthalmic goiter where enlarged thymus is suspected. Ed.

1087

Treatment of Otomycosis. H. P. Bellows, *Jour. Ophthal., Otol. and Laryngol.*, Sept., 1916.

There are four objects to be attained in treatment: (1) to properly cleanse the external canal and drum head; (2) to reduce the local inflammation; (3) to effectively destroy all the parasitic germs present; (4) to prevent recurrence. To meet all these essentials the author outlines the following treatment: Removal of the growth thoroughly by means of blunt ring curette and, if necessary, gentle syringing and drying with absorbent cotton. Application of hydrogen peroxide, full strength, for five minutes (filling the ear with it if there is no perforation). To reduce the inflammation the author gives belladonna internally. To destroy the parasitic germs peroxide irrigations followed by saturated boric acid solution in 50 per cent alcohol, night and morning, for several days are advised. To prevent recurrence absolute dryness is essential (dusting powder). Ed.

1094

Case of Herpes Zoster Oticus. Archer Ryland, *Jour. Laryngol., Rhinol. and Otol.*, Dec., 1916.

The patient complained of the following symptoms: pain in the left ear, aching pain and swelling of the left ear itself, slight deafness in left ear but no discharge, weakness of the left side of face, pain on swallowing and soreness in left side of throat, weakness and watering of left eye, giddiness and nausea and vomiting. In the first few days of the disease prostration was great and the clinical picture as can be seen from the symptomatology, resembled an intracranial complication. The duration of the herpes (which was the decisive factor in the diagnosis) was eight days. It had an auriculo-temporal distribution. Throughout the attack the temperature was subnormal and the pulse slow. Leucocyte count normal; spinal fluid normal. Ed.

1095

Diffuse External Otitis. C. A. Torrigiani, *Arch. ital. di Otol., Rinol. e Laringol.*, Oct., 1916.

This article deals with artificially induced external otitis and details four cases in soldiers who in order to be placed on the sick list rubbed various varieties of euphorbia on their ears. The intensity of the inflammation will depend upon the duration of application of the plant. The various stages of the evolution of the inflammation may be divided into (1) erythematous edema; (2) vesicular stage; (3) eczematous stage; (4) ulcerative stage. Treatment consisted of applications of bland salves and complete cure resulted in several days. Ed.

1098

The Discharging Ear. Albert Bardes, *Medical Record*, Sept. 30, 1916.

Practically all middle ear infections start in the nasal chambers following grippe, tonsillitis, scarlatina, and measles. Surf bathing and the promiscuous nasal douche also cause many infections of the middle ear. Infants are very susceptible to such involvement, owing to the nearness of the middle ear to the posterior nares. Scarlatina is the most destructive infection to the ear in child life. The author states that twenty per cent of all deaf mutes, and a great proportion of other persons with disabled ears owe their misfortune to that disease.

In discussing treatment, the author thinks it far better to open the membrane prematurely than to allow infection to spread. The usual forms of therapeutics are advised. Never should the drum be incised without an anesthetic. The internal Wilde incision is recommended. In chronic suppuration, the Schwartze operation is advised, as the Stacke method leaves the hearing much disturbed. M. D. Lederman.

1101

Chronic Suppurative Otitis Media. A Modified Radical Operation. Hugh B. Blackwell, *New York Med. Jour.*, August 26, 1916.

Usual incision as in Stacke operation. Soft parts elevated and retracted. The antrum is opened, and the posterior bony canal wall is lowered until the facial ridge is reached, leaving only an epitympanic ring in the superior portion, the membrana tympani and the ossicles are left intact. The wound is packed and closed as in the radical operation by cutting a flap.

The purpose of this operation is to stop the discharge, and to conserve, or, if possible, to improve the hearing. In a series of sixteen cases, eight resulted in dry ears, and eight were intermittently dry. An interesting feature is the development of a secondary tympanic membrane.

Francis R. Packard.

1103

Perforations of Shrapnell's Membrane. J. V. E. Clay, *Jour. Ophthal., Otol. and Laryngol.*, March, 1916.

Perforations of Shrapnell's membrane are considered by some otologists as invariably indicating necrosis. From clinical observations the author concludes that perforations of Shrapnell's membrane may be classified as those associated with chronic tubo-tympanic obstructive lesions and those belonging to the chronic suppurative class. The perforations due to obstructive tubo-tympanic disease may become suppurative through subsequent infection. It is interesting to note that in many cases of suppurative lesions there is an absence of a history of acute aural suppuration. The author does not believe that all cases of perforations of Shrapnell's membrane spells necrosis. Careful removal of crusts and simple cleanliness will sometimes cause covering of the perforation by epithelium. Ossiculectomy should be practiced only if it can be proven that necrosis is confined to the ossicles. Where there is evidence of necrosis in the attic the radical mastoid should be performed. Ed.

1104

Vaccine Treatment of Chronic Suppurative Otitis Media G. M. Coates and M. S. Ersner, *Pennsylvania Med. Jour.*, May, 1916.

The authors' report is based on a series of 50 cases treated with autogenous vaccines, as well as the results in 21 of the cases of complement-fixation tests, 21 Wassermann reactions and 25 von Pirquets. All of the 50 cases were of the pronounced chronic type. A cessation of the discharge was obtained in 46 per cent. The technique of taking cultures for vaccine preparation was to cleanse the middle ear and canal as thoroughly as possible with cotton swabs or by suction; fill the canal with alcohol for ten minutes; remove and dry by evaporation for fifteen minutes. Then by inflation or by suction a drop of pus was obtained on a sterile platinum loop inserted through a sterile speculum. While vaccine therapy will permanently stop the discharge in a good many of the chronic cases, those showing bony encrosis, cholesteatoma and possibly labyrinth suppuration would not yield good results. Ed.

1105

Final Report on the Isolation and Cultivation of the Tubercle Bacillus from the Discharging Ear in Cases of Chronic Purulent Otitis Media. G. H. Cocks and J. G. Dwyer, *Jour. Laryngol., Rhinol. and Otol.*, July, 1916.

The technique employed is as follows: A solution of 3 per cent sodium hydrate is used to wash the discharge from the ear or mastoid wound. This discharge is then allowed to stand in a sterile flask in an incubator for one to three hours, being shaken at intervals. When the flakes of mucus have been dissolved the mixture is thoroughly centrifugalized and the supernatant fluid poured off. The precipitate is neutralized with normal hydrochloric acid, using litmus as an indicator. The residue is then inoculated into a series of Miller's culture media (extract of glands, spleen and lymphatic tissue of laboratory animals). Growth takes place, if tubercle bacilli are present, in from ten to twenty days. Subcultures are then made. This method is used by the authors in the late cases.

For the early cases they use the anti-formin method in conjunction with Petroff's medium.

The authors report on fifteen cases (with synopsis) proved by culture and smears from the aural discharge to be tuberculous and one case which proved to be tuberculosis of the antrum of Highmore. In another series of thirty-two children, ranging in age from ten months to fifteen years, presenting aural discharge, five showed positive cultures showing, in accordance with previous figures compiled by the authors that 15.6 per cent of all chronic purulent otitis media in childhood are tuberculous. Ed.

1108

Aural Complications of Grippe. Edward B. Dench, *New York Med. Jour.*, Dec. 16, 1916.

The author brings out the following points: (1) Aural complications of influenza are severe chiefly from the fact that the constitutional infection lowers the general bodily resistance. (2) The hemorrhagic type of inflammation, both in the middle ear and in the mastoid process, occurs probably more frequently as a complication of influenza than other constitutional diseases. (3) Operative interference in these cases must depend upon the otoscopic appearances and the local symptoms. In other words, the actual lesion determines the surgical interference.

So far as the bacteriology of the condition is concerned, the author states that he has yet to see a single case of mastoiditis or a single case of middle ear infection due to the specific organism of influenza. In cases of so-called influenza otitis the infecting organism is almost always a streptococcus. Ed.

1111

A Factor in the Prognosis of Acute Suppuration of the Middle Ear. F. F. Franchere, *Annals Otol., Rhinol. and Laryngol.*, Dec., 1916.

Besides the powers of resistance of the patient, the severity of the infection and the question of adequate drainage the author points out that there is another factor concerned in the prognosis of middle ear suppuration, namely, the anatomic structure of the mastoid cells. The chances for complications are greater where the cells are larger than where they are small and of uniform size. Ed.

1118

Note on the Value of Hexamine in Aural Suppuration and Meningitis. D. Guthrie, *British Med. Jour.*, Sept. 30, 1916.

The drug has no value in these conditions. In four cases of chronic otitis media where the author administered the drug in large doses, and in two cases of meningitis, the secretions and the spinal fluid respectively were entirely free from either hexamine or formaldehyde. Ed.

1119

Tuberculosis of the Middle Ear. H. B. Graham, *Annals Otol., Rhinol. and Laryngol.*, March, 1916.

During the past four years the author has studied nine cases of middle ear tuberculosis, the diagnosis being based upon the clinical histories and examinations, pathological sections, presence of tubercle bacilli in the discharge and by animal experimentation. In a general way the clinical picture may depend upon the anatomical part involved (mucous membrane, drum, bone) but the process may be more or less general throughout the middle ear and may be classified into the following varieties:

(a) *Lupoid.* This occurs in adults, extends over a long period of time and is marked by repeated exacerbations. In early cases the discharge is pronounced during the attacks; hearing is decidedly impaired but returns upon subsidence of the discharge. In late cases the discharge is scanty. There is frequent destruction of the labyrinth in these cases.

(b) *Infiltrating.* Clinically these cases are sub-acute, leading to early perforation of the drum. As a rule there is deafness due to thickening of the mucous membrane and to labyrinthine degeneration.

(c) *Fungoid.* There is much granulation tissue produced in the middle ear and mastoid without bony change and with small amount of discharge. Often the process may be confined to the mastoid alone, the middle ear being free.

(d) *Necrotic.* Most often attacks adults. Pus formation is often profuse and the antrum is filled with caseous material and sequestra floating in pus. The middle ear is lined with small, flat granulations in the form of polypi.

(e) *Fibrinoid.* This is the rarest form and is characterized by a thick, dry, whitish deposit on the promontory wall under which lies a granulating bony surface.

(f) *Myringitis of Moller.* This is a type of the infiltrating variety.

Ed.

1123

Treatment of Exudative Middle Ear Catarrh. Jacob B. Heidenreich, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

The author disputes the opinion held by some that a serous exudate from the tympanic cavity will undergo spontaneous absorption. Further the differential diagnosis between serous and mucous exudate is rather difficult. Every case of middle ear exudate, whether serous or mucous, small in quantity or large, acute or chronic, should be subjected to paracentesis and the middle ear cavity blown out with air. Only through such measures are favorable results to be obtained. Ed.

1129

Injection of the Gasserian Ganglion Through the Foramen Ovale. H. H. Martin, *Southern Med. Jour.*, July, 1916.

The author states that the operation has reached beyond the experimental stage and will eventually supersede the extirpation of the ganglion, division of the sensory root, peripheral and nerve trunk injection. Certain accidents must be guarded against as the needle will pass near the internal maxillary artery which lies close to the inferior maxillary nerve in the spheno-maxillary fossa and sends a small branch through the foramen ovale. If the needle is improperly directed it may enter the foramen spinosum, the jugular foramen or an emissary vein (Civinini) just below the foramen ovale, or the internal caritid or cavernous sinus might be injured. Hence, the operation demands a thorough knowledge of the anatomy of the parts and considerable surgical dexterity. Ed.

1131

Acute Middle Ear Suppuration. John J. O'Brien, *New York Med. Jour.*, Sept. 30, 1916.

The author calls attention to the frequency during the past winter of acute otitis media following grippe. He points out the importance of routine examination of the ear in these cases, and the early incision of the drum to prevent the complications of mastoiditis, meningeal, cerebral and cerebellar, and vestibular complications that may follow its neglect.

Francis R. Packard.

1135

Lesions of the Middle Ear from Aerial Commotion. A. Saupiquet, *Rev. de Laryngol., d' Otol. et de Rhinal.*, No. 24, Dec. 31, 1916.

The only point about the large number of cases of auditory lesions from shell explosions, etc., noted by the author was the relatively small proportion of lesions of the middle ear. Of 164 cases of ear disease produced by commotion only 26 were instances of commotion of the labyrinth associated or not with lesions of the middle ear. The affections of the middle ear produced by commotion are divided by Saupiquet into three classes:

Class 1. Twenty-four cases. Perforation of the drum of various size, always with more or less ragged edges. More or less free bleeding. Condition tended to cure without infection of the middle ear, the lesions gradually cicatrizing, if the membrane was not too extensively destroyed. If middle ear infection occurred the otorrhea made its appearance within the first two or three days. Sometimes it was a mucous or muco-purulent oozing, at other times a true purulent otitis. Of the twenty-four cases observed eighteen showed this suppuration.

Class 2. Thirty-two cases. The lesion first seen was not a perforation but a simple attrition of the tympanic membrane. At the first examination there was slight intratympanic hemorrhage, often along the handle of the malleus, sometimes at the level of Shrapnell's membrane; in some cases there was a small hematoma. This hemorrhagic lesion gradually disappeared and in a few days the drum head was normal, or it might be transformed into a perforation, depending upon the depth of the attrition and the mortification of the tissues. The author noticed secondary perforation in twenty cases. The time of appearance varied from three or four days to a fortnight after the injury. The appearance of the secondary perforation differs from primary perforation in that the opening is not a tear or bursting of the membrane, but is a thin sharp-edged lenticular perforation. This perforation may cicatrize without suppuration or a purulent otitis media may develop. The tendency towards cure is greater in the secondary than in the primary perforations.

Class 3. Cases in which a purulent traumatic otitis media comes on suddenly.

Ed.

1141

A Fatality Following Acute Otitis Media. Irving W. Voorhees, *Medical Record*, Sept. 23, 1916.

The patient died suddenly and the consensus of diagnostic opinion was: mastoiditis, brain abscess, rupture into the lateral ventricle. The author

publishes the case because of the following conclusions: 1. Any apparently "simple" acute otitis media is capable of producing dire results. 2. The appearance of the drum may be very misleading. Behind it may be lurking the deadly streptococcus mucosus. 3. A culture should be taken in every case and the predominant germ identified if possible. 4. Any abrupt cessation of discharge accompanied by a severe unilateral headache is an unfailing sign of some complication calling for operation. 5. No patient with an acute otitis should be allowed to get away from the observation of a trained otologist until all symptoms have disappeared and a condition of restitutio ad integram has been obtained.
Ed.

1145

Massage of the Eustachian Tube. Alfred Lewy, *Annals Otol., Rhinol. and Laryngol.*, Dec., 1916.

The technique is that described by Mink. A nasal applicator is curved to about the same degree as an Eustachian catheter, but a shorter segment of curve is used. A number of different lengths of curve are necessary to fit septal deviations and various anatomic conditions. The cotton is best folded on itself and wound around the carrier so as to form a thick ball rather than a brush to avoid trauma. After cocainizing the region of the mouth of the tube, the cotton-wound applicator is passed back to the posterior wall of the pharynx, swept upward in the fossa of Rosenmueller, brought forward over the mouth of the tube and immediately downward and back under the mouth of the tube. This motion is repeated about twenty times or as often as the operator's judgment indicates.

The results obtained by the author have been very satisfactory in cases of tubal catarrh and in acute and chronic otitis media. No special results have been obtained in the treatment of tinnitus. Ed.

1147

Hereditary Syphilis of the Internal Ear. Oscar Beck, *Medizinische Klinik*, No. 12, 1916.

Beck distinguished the following main types: 1. Isolated involvement of the acoustic apparatus; 2. Simultaneous involvement of the cochlear and vestibular apparatus; 3. Involvement of the static labyrinth alone. He takes up only the first type of the disease, the frequency of which amounts to 20-30 per cent in hereditary syphilitic children. Three forms are described according to symptomatology. 1. *The apoplectiform*, in which the onset of the deafness is very sudden, sometimes over night, the static function remaining undisturbed. The usual age of recurrence is the tenth year. Prognosis is absolutely unfavorable. 2. *Insidious form*, the age of occurrence being about the same as in the apoplectiform, often associated with Hutchinson's triad. 3. In this form subjective noises are most prominent, the hearing capacity apparently remaining unimpaired.

The author also points out various analogies between the clinical symptoms and anatomical findings in otosclerosis and hereditary syphilis, but of course, there are essential differences.

The pathologico-anatomical processes in hereditary syphilitic disease of the internal ear are (1) degenerative inflammation of the acoustic nerve;

(2) secondary inflammatory processes of the acoustic nerve; (3) periostitic process in the labyrinth capsule with endolabyrinthine changes. Ed.

1150

Labyrinthine Inflammation Secondary to Chronic Purulent Otitis Media. Charles B. Broder, *New York Med. Jour.*, Oct. 7, 1916.

The anatomy of the middle ear and of its contiguous structure show the dangers of a chronic discharging ear. The inflammation may spread readily, especially if drainage is interfered with. Infection may reach the labyrinth by the way of the oval or round window through a fistula of one of the semicircular canals, or a fistula of the promontory. Sometimes it may remain localized in the labyrinth, or cerebral or cerebellar abscess, meningitis or thrombosis may complicate the condition. An early radical mastoid will often prevent these complications.

Francis R. Packard.

1156

Labyrinthitis; Report of Cases in Acute Suppurative Otitis Media and After Operations. D. M. Campbell, *Jour. Michigan State Med. Soc.*, p. 481, 1916.

The author reports two cases of serous labyrinthitis complicating acute suppurative otitis media, both relieved by simple mastoid operation, and one case of diffuse serous secondary labyrinthitis developing the thirty-sixth day following a simple mastoid operation relieved by a radical tympano-mastoid exenteration. Two cases developed symptoms of labyrinth disturbance upon recovery from the anesthetic following the radical tympano-mastoid exenteration, both of which showed improvement from day to day so no further surgical interference was necessary.

The diagnosis of purulent manifest labyrinthitis should be made by the entire absence of all labyrinthic reactions and should be promptly drained in acute cases and in chronic cases as part of the radical operation in the presence of a dead labyrinth. Ed.

1160

Orientation and Equilibration. Dr. Arthur B. Duel, *New York Med. Jour.*, March 25, 1916.

The author states that the eighth nerve—the auditory—should be described anatomically and physiologically as the nerve of hearing only, with its end organ the cochlea. The vestibular branch should be given a place by itself and should be described as the nerve of orientation only, with its end organ the vestibule and semicircular canals. Anatomical evidence shows that the distribution of the vestibular and auditory fibers is to entirely different centers. A normal child of seven or eight years has unconsciously acquired a sense of orientation and a power of equilibration, by an adjustment of muscles and joints, which in magnitude far exceeds that acquired in later years, by practice and training for the most difficult pursuits. The sense of position in space (orientation) and adjustment to it is more important than any other function in the struggle for existence. In the simplest forms of phylla, in certain jelly fish, a stiffened tentacle which has acquired a considerable degree of inertia furnishes the organism with its knowledge of position. Progressing a little further to a higher order, we have a modified mechanism, an otolithic apparatus made up of calcareous particles, more or less freely suspended and which are by gravitation responsive to movement. As evolution progresses we have in the higher forms a comparatively elaborate mechanism, the otolith being suspended in a specially formed cavity and surrounded by fluid. Progressing to the highest orders impulses are received by the medulla and pons through sensory nerves from the eyes, semicircular canals, the joints, muscle and skin and relayed through the interior cerebellar peduncle to the cerebellum. From here impulses are sent out to the red nucleus and from the red nucleus through the rubrospinal tract to the anterior horn cells and from here through the motor nerves to the muscles of the trunk, head and eyes. Other impulses from the cerebellum reach the same distribution by passing through the uncinate tract through Deiter's nucleus and through the Deiterospinal tract into the anterior horn cells. Of all the sensory end organs, however, the vestibular apparatus is the most essential factor in the sense of orientation. Furthermore, binaural hearing is as essential to judging the direction of sound as binocular vision is essential to perfect judgment of distance. ED.

1164

A Translabyrinthine Operated Case of Acoustic Tumor. ARTHUR AF FORSELLES, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Bd. 1, No. 1, p. 29, 1916.

Patient, male, 40 years old. For three months right sided headache, later vertigo, loss of acuity of vision, deafness and vomiting. Wassermann negative. No disturbances of the olfactory, trochlear, vagus or accessory nerves. Pupils normal. Hyperesthesia of sensory branch of trigemius on diseased side. Right ear deaf. Abducens and facial nerves paretic. Spontaneous, horizontal nystagmus both sides, more pronounced on looking towards the right. Labyrinth calorically and galvanically not excitable. Gait unsteady, tendency towards right; falling direction towards right; protrusion of tongue towards right. Tumor removed by translabyrintine operation proved on examination to be a fibroma. No evidence of recurrence two years after operation. ED.

1167

Pathology of Otosclerosis. J. S. FRASER and R. MUIR, *Jour. Laryngol., Rhinol. and Otol.*, Nov., 1916.

This article is a most excellent and detailed review of our present knowledge of otosclerosis, histo-pathologically and clinically. The conclusions are: (1) Some cases of otosclerosis (spongification of the labyrinth capsule) appear to be of the nature of a blood infection and may be called "primary." We would expect that further research would show that in these cases the bony changes are widespread throughout the skeleton. (2) Other cases of otosclerosis undoubtedly follow attacks of catarrhal or purulent otitis media, the infecting process invading the labyrinth capsule at the anterior margin of the oval window. Such cases may be called "secondary." (3) From the clinical standpoint heredity plays an important part in otosclerosis but, as the condition is chronic, inflammatory process, the infective agent must gain access to the labyrinth capsule either through the blood-stream or from the middle ear cleft. (4) It has been proved by clinical and microscopical research that "atypical" cases of otosclerosis exist in which functional examination of the ear reveals the presence of nerve deafness. The relationship between the bony changes and the nervous affection is not yet clear. Ed.

1177

Involvement of the Internal Ear in Epidemic Parotitis. C. Heilskov, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

Three cases, in all of which the symptom complex pointed to an endolabyrinthine affection—a diffuse labyrinthitis in the first case, a circumscribed labyrinthitis in the second case and a serous labyrinthitis in the third case. The ages of the patients were 22, 16 and 36 years, respectively. Ed.

1183

A Case of Polyneuritis Cerebralis Menieriformis. Hans Key-Aberg, *Oto-Laryngologiska Meddelanden*, Bd. 2, H. 2, p. 387, Aug., 1916.

A girl, 20 years old, a laundress by occupation, suddenly became ill with vertigo, headache, vomiting and the development of facial paralysis. Otological examination showed retraction of both drum membranes and impaired hearing on the right. Examination of the vestibular apparatus showed rotatory, caloric and galvanic tests normal, or at least a slightly increased irritability. Wassermann negative; x-ray negative. One month after the onset of the illness the impaired hearing had disappeared, and the facial paralysis had also disappeared. This case differs from those described by Thornval in that it was entirely cochlear while Thornval's were vestibular and cochlear. Ed.

1189

Cerebellar Localization; An Experimental Study by a New Method. I. Leon Meyers, *Jour. Amer. Med. Assn.*, Dec. 9, 1916.

Meyers goes at length into the description of his method of experimenting with the centers of the cerebellum by excitation with oil of absinthe, which has a peculiar influence on these centers, and he describes the myograms of the absinthe convulsions at length, and with myograms. His conclusions from these are given as follows: "1. The function of the cerebellum is to inhibit, control and regulate the activity of the motor cortex of the cerebrum and the paracerebellar nuclei in the medulla. 2. The phenomena of cerebellar deficiency are, accordingly, to be interpreted as phenomena of hyperfunctional and not hypofunctional activity. 3. The cerebellum is functionally differentiated for the various muscle groups of the body, indirectly, by being primarily related through its various lobules to the various motor centers in the cerebrum and the tonus centers in the medulla, just as a posterior root ganglion is, in a motor sense, related to a certain muscle complex through its corresponding group of motor cells in the anterior horn of the cord. 4. The paramedian lobule is, in this manner, related to its homolateral hindlimb, and probably also to the contralateral hindlimb; the crus secundum to the homolateral hindlimb, very likely, exclusively, and the crus primum to the homolateral forelimb. 5. These results are in general in conformity with the theory of cerebellar localization as postulated by Bolk. They differ from it only as regards the paramedian lobule,

which Bolk assumed was the center for unilateral movements of the muscles of the trunk." Meyers makes the suggestion that these experiments may possibly have a diagnostic significance in suspected cases of cerebellar diesases and the administration within physiologic limits, as was done, might make certain evidences of cerebellar deficiency more obvious in suspected cases, and also aid in the location of the lesion.
Ed.

1190

Tests by Barany Methods Demonstrating Neuraxial Differentiation of the Fibers from the Vertical Semicircular Canals. C. K. Mills and I. H. Jones. *Jour. Amer. Med. Assn.*, Oct. 28, 1916.

The cause of vertigo has been somewhat of a perplexing problem at times. Whenever the primary lesion, the labyrinth and its associated pathways and brain centers are involved, the Barany tests furnish us the means for studying this vestibular apparatus, and also enable us to determine more positively where an intracranial lesion which may be involved is located. Cajal has shown that the fibers from the vestibular portion of the eighth nerve enter Deiters' nucleus and continue from the inferior cerebellar peduncle into the cerebellum itself. The authors believe that (1) this path includes the fibers from the horizontal semicircular canals exclusively, and (2) the fibers from the vertical canals have an entirely different course. The former are confined to the oblongata, while the latter ascend into the pons. The authors report in detail a case in which the Barany tests were used in which a tumor was found extending from the uppermost portions of the cerebral peduncles through the pons and into the cerebellar lobe on the left side, and comment in detail on the diagnostic points made with the tests. From the results they are confident that the fibers from the horizontal canal and the fibers from the vertical canals have separate pathways in the neuraxis. That the horizontal canal fibers are confined to the oblongata and enter the cerebellum through the inferior peduncle, and that the vertical canal fibers ascend into the pons and enter the cerebellum through the middle peduncle, they believe to be highly probable, but feel that evidence to date is insufficient to enable them to speak with confidence as to the exact course. Ed.

1191

Test for Functional Capacity of the Vestibular Labyrinth. E. J. Moure, *Bull. de l' Acad. de Med. de Paris*, April 11, 1916.

The individual with eyes shut and head bent forward turns five or six times around a pole or a cane. Then he opens his eyes and tries to walk forward in a straight line. The normal are unable to do this, always being propelled in the direction in which they have been turning, and sometimes falling in this direction.. Those with impaired labyrinth are able to walk almost or quite straight after the rotary movement.
Ed.

1198

Treatment of Labyrinthine Affections. W. C. Phillips, *New York State Jour. Med.*, Aug., 1916.

Many cases of purulent labyrinthitis recover spontaneously even where a part or whole of the labyrinthine capsule becomes necrosed. Out of

36 cases there were 14 operations upon the labyrinth, 7 of which were for the removal of necrosis or sequestra in patients who had long since passed the acute stage of the disease. This leaves 7 operations for more or less acute labyrinthitis; there were 5 fatalities. Indications for operation depend upon the type of labyrinthine involvement. Non-suppurative cases resulting from parotitis, hemorrhage, epidemic cerebrospinal meningitis should never be subjected to operation. Neither should patients with serous labyrinthitis be operated on. In acute diffuse purulent labyrinthitis operation should be done even though meningeal symptoms have already appeared. Cases of so-called paralabyrinthitis should invariably be subjected to the radical mastoid operation. Ed.

1199

Involvement of the Labyrinth by Way of the Ductus Endolymphaticus.

Norval H. Plerce, *Annals Otol., Rhinol. and Laryngol.*, Dec., 1916.

A case (two others are referred to) is reported of otitis media following grippe infection in which the labyrinth subsequently became involved by way of the endolymphatic duct. There was absence of swelling or pain in the mastoids and skiagraphs were negative. Both mastoids were, however, opened and a small amount of pus found in each. The labyrinth involvement occurred about one month later. The author emphasizes the following points: 1. The saccus endolymphaticus may be involved more frequently than is usually supposed in acute softening processes of the mastoid. 2. It is our duty in all cases of mastoid involvement without external manifestations except temperature, to very thoroughly search for softened areas deep down in the bone and not cease until we come to healthy structure. 3. We should always bear in mind in suppurative labyrinthitis not only to open into the bony labyrinth but to explore the region in which the saccus endolymphaticus is situated. 4. Within the first few days serous labyrinthitis cannot be differentiated from suppurative labyrinthitis. Ed.

1201

The Ear Tests of Barany in Locating Cerebellar and Other Encephalic Lesions.

Drs. B. A. Randall and I. H. Jones, *Amer. Jour. Med. Sc.*, April, 1916.

The authors have come to a definite conclusion that all pointing reactions are primarily *cerebral* and not cerebellar, as generally stated. When a person is tested and, for example, with erect head is turned to the right, he has, on stopping, a subjective sensation of turning to the left. For this reason he feels that he is leaving the finger of the examiner behind him and points to the right where he conceives the finger now to be. He deliberately points to the right unless by a non-automatic, calculated correction he overcomes the misconception of the position of the finger. If after the usual past-pointing the examiner's finger is moved out to meet that of the examined, who then repeats the test, he past-points almost as much farther to the right and would continue, perhaps, to the completion of an entire circle in his chase of the seemingly moving finger but for the limitations enforced by his seating. Yet if rotated and asked to make the same movements of the arm without any finger to touch he maintains it in the same body-plane with little or no deviation, since he conceives his plane to rotate with his seemingly revolving body. There is, therefore, no cerebellar or automatic drawing of the arm to one side; the past-pointing is purely cerebal. Yet we have it achieved through the synergising action of the cerebellum. But the cerebral mandate is associated with cerebellar influence, the muscle-sense, arthrodial sense, tactile, auditory and visual impressions and memory. The movement is initiated by the cerebrum and whatever deviation occurs is because the ear-stimulus has given by artificial means a false conception of the position in space. The authors further offer two postulates: (1) that the subjective circuit is *through* the cerebellum to the higher centers; (2) that the fibers from the different semicircular canals have entirely *separate tracts* of their own and that there is a complete central differentiation for the different canals. ED.

1232

Lid Reflex as a Test for Deafness. F. GAULT, *Presse Med.*, Sept. 21, 1916.

Convinced that the ordinary subjective tests of hearing based on the patient's own statements were often unsatisfactory Gault decided upon the following test: The patient is so seated that he is unable to see a bicycle horn placed about six feet from him. The opposite ear from the one being tested is plugged with cotton. The horn is blown suddenly while the eyelids are watched under a magnifying lens. The sudden impression on the auditory nerve, in normal ears, has always been followed by a slight or marked orbicular contraction. In total organic deafness the test is negative. In neuropathic deafness following shell explosions some reaction could be obtained and when the patient was apprised of this rapid improvement in hearing was obtained. The method is a good means of eliminating malingerers. ED.

1241

How Can We Meet the Problem of the Deaf? HAROLD HAYS, *Jour. Ophthalmol. and Otolaryngol.*, Nov., 1916.

As regards the medical problem the author states that in years to come the treatment of deafness must be attempted along more rational lines. The otologist must understand that in the majority of cases he is dealing with a physical process and he must interpret the change which has taken place in each individual case and treat the case accordingly. Empirical methods of treatment such as continuous inflation by the Valsalva method or through the Eustachian catheter are things of the past. In meeting the problem of deafness and its prevention it is necessary that one go back to early childhood to correct conditions that frequently exist at that time and which are undiscovered. Many a child who is considered stupid in school is only stupid because he is unable to hear as well as other children. The examination of the ears is just as important as the examination of the eyes. Among the many causes in early life which lead towards progressive deafness may be mentioned acute suppurative conditions of the ears which have subsided, hypertrophied tonsils and adenoids, subacute and chronic infections of the nose and nasopharynx.

The physician's duty does not cease with the medical treatment of the condition. There is a vast social and economic problem and incidentally an educational problem which must be met. To-day the education of the deaf is a problem that is receiving a great deal of consideration. The instruction of the deaf child should begin at the earliest possible moment. If he is taught properly the child learns to speak readily and very often becomes a proficient lip-reader. Instruction in lip-reading for adults is extremely important, and the author cites several cases of people incapacitated by their deafness who have been rehabilitated as useful members of society by means of lip-reading. Ed.

1243

Re-education of the Ear with the Maurice Kinesiphone. Gunnar Holmgren, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

In the course of two years experiments were carried out as follows:

Otosclerosis, 70 cases; 6 benefited, 25 slightly benefited, 3 aggravated, the remainder, no change.

Deafness due to dry middle ear catarrh, 15 cases; 8 improved, one very strikingly.

Deafness resulting from suppurative otitis media, 25 cases; 11 improved.

Nerve deafness of indeterminate cause, 18 cases; 7 improved.

The author believes, accordingly, that the method has a certain value but in all cases it should be under the direct control of the otologist. Ed.

1246

Prognosis of War Deafness Based on 1000 Cases. M. Lannois and F. Chavanne, *Lyon Medical*, Feb., 1916.

There was more or less total deafness in 645 of the 1000 soldiers and the deafness dated from a concussion of the internal ear without any direct traumatism to the ear. All but two per cent recovered and these were left permanently deaf in both ears. Ed.

1248

Re-education in Traumatic Deafness by Training with the Vowel Siren. Marage, *Bull. de l' Acad. de Med. de Paris*, Oct. 24, 1916.

A series of one hundred cases comprising twenty-one cases of traumatic cicatricial otitis media, all of which were relieved by this method; eleven of labyrinthine concussion, of whom nine were relieved; fifty-nine of combined cicatricial otitis media and labyrinthine concussion, with forty-six relieved; nine of non-traumatic organic deafness, eight relieved. Ed.

1253

Deafness from Shell Explosions. I. Ranjard, *Bull. de l' Acad. de Med. Paris*, Sept. 12, 1916.

The deafness resulting from shell concussion may be organic or neuropathic. It is organic when the organ of Corti is injured; neuropathic when there is inhibition of auditory sensation. The organic form is associated with otitis media, labyrinthine concussion, or auditory neuritis. True neuropathic deafness is usually accompanied by mutism, is bilateral and complete for all sounds and is not associated with vestibular disturbances. These features may also be present in organic deafness so that while one cannot prove clinically that a given case is pure neuropathic deafness, it may however be excluded. Neuropathic deafness is amenable to psychotherapy; organic deafness may be benefited by auditory re-education. ED.

1287

The Aural School-clinique. KERR LOVE, *Glasgow Med. Jour.*, Feb., 1916.

Since nearly all the middle-ear disease of later life, both suppurative and non-suppurative, commences during the earlier years of the school period, the author regards the advent of the aural school-clinique as perhaps the most important development which has taken place in the treatment of ear disease for the last quarter of a century. Not only is treatment more important during the school period than at any subsequent time, but it is also very successful.

In Glasgow four well equipped school-cliniques have been in operation for a period of four years. Practically no operative work is undertaken, all cases requiring such treatment, including removal of tonsils and adenoids, are referred to the hospital serving the district in which the child resides. During the four years about 3250 cases, or 3 per cent of the children attending school have been treated. It has been found that in most cases permanent arrest of the discharge can be effected without operative treatment of any kind. In many others attention to the nasopharynx in addition to careful dressing of the discharging ears was required.

Although the results hitherto obtained are very satisfactory the best results cannot be secured until the School Board assumes the whole responsibility for the treatment of the children's ears, including all the necessary operative measures. GUTHRIE.

1293

Cauliflower Ear. D. H. PALMER, *Jour. Amer. Med. Assn.*, Feb. 5, 1916.

Palmer's treatment is described by him as follows: "After preparing the skin surfaces of the ear, the meatus and immediate vicinity of the face and scalp after any of the approved surgical methods except iodin, which causes intense itching, and plugging the external meatus with cotton, I make an incision under local anesthesia slightly below the prominent part of the swelling through the skin and perichondrium into the hemorrhagic cavity. All clots, newly formed cartilage or bone should be removed with a small gouge or curet, the surface of both cartilage and perichondrium being scraped until smooth. The incision is now closed, except for a small opening which will just admit the end of a Eustachian catheter, connected through a waste bottle with a small Pynchon pump. This rapidly removes the accumulated blood, and the suction approximates the loose layer of skin and perichondrium to the cartilage. The skin surface is now thoroughly dried and a fresh plug of cotton is placed in the external auditory canal. A generous coating of sterile petrolatum is now applied over both surfaces of the ear and the adjacent skin of the face and scalp. Should there be any area in which the skin and perichondrium are not perfectly approximated, I make a small mold of dentist's modeling wax or sheet lead and apply pressure at that point. The mold, coated with petrolatum, is now placed about the ear and half a tumblerful of plaster of Paris cream, prepared by an assistant, is poured into the mold, completely surrounding the ear." As the plaster hardens a slight rotary motion of the catheter permits its easy withdrawal and establishment of a drain. The cast is removed by fragmentation ten days after the operation, the ear keeping its shape as adjusted." ED.

1295

Experimental Studies of Injection of the Gasserian Ganglion Controlled by Fluoroscopy. L. J. POLLOCK and H. E. POTTER, *Jour. A. M. A.*, Nov. 4, 1916.

In order to facilitate the technique of injection of the Gasserian ganglion by Härtel's method the authors use as a landmark the shadow cast by the anterior border of the temporal bone on a fluoroscope. ED.

1312

Examination of the Discharge in Mastoid Disease. A. H. ANDREWS, *Jour. Ophthalmol. and Oto-Laryngol.*, Sept., 1916.

The author believes that none of the clinical symptoms, blood count or bacteriological findings can be depended upon to give a correct index of what is going on in the mastoid. He advises that rather thick smears should be made of the discharge and immediately dried and fixed with heat. The smear should be lightly stained with hematoxylin and after drying and washing, examined by low power. Bone particles appear very dark or black in a comparatively light field. The specimen should be taken from the deeper part of the canal or beyond the membrane. The clinical significance of the presence or absence of these bone particles is that so long as there is no breaking down of the bony partition between the mastoid cells it is possible that the mastoid disease may clear up without operation. ED.

1313

The Streptococcus Mucosus Capsulatus as a Cause of Mastoid Disease. GORHAM BACON, *Boston Med. and Surg. Jour.*, Oct. 26, 1916.

In the author's experience the streptococcus mucosus capsulatus is the most destructive germ with which the otologist has to deal and from the cases cited the following points are emphasized: Pain may be very severe or very slight and the temperature is seldom much above normal. There may or may not be tenderness over the mastoid. The discharge may be profuse or slight and there may be absence of sagging of the posterior and superior canal wall. The x-ray is a valuable aid in diagnosis. There may be great destruction of bone even in cases presenting few symptoms. Only in very few cases can an operation be avoided. ED.

1322

Obscure Cases of Mastoid Involvement. A Study of the Diagnostic Signs. DR. EDWARD B. DENCH, *New York Med. Jour.*, March 18, 1916.

The author recites personal experiences with mastoid cases tending to show that the inflammatory process in the mastoid may steadily progress, although the middle ear condition may clear up. In all the cases enumerated the middle ear condition seemed to be improving and in all but one the drum membrane had entirely healed, and yet at the time of the operation, extensive destruction was found within the mastoid. Answering the question as to how we can tell in a given case of acute aural suppuration that there will probably be serious mastoid involvement, the author believes, in the first place, that he site of the inflammatory process is important. Inflammations confined to the lower part of the tympanic cavity are much less liable to be followed by serious mastoid infection than cases in which the upper part of the cavity is involved. Secondly, in any case of acute middle ear inflammation where there is aural discharge longer than two weeks after the inception of the trouble and granted that drainage is free there is sufficient mastoid involvement to warrant at least exploratory operation. In regard to tenderness, this symptom at the beginning of an acute otitis is of comparative insignificance, but tenderness which appears after the fourth or fifth day of the attack is of great significance. The nature of the discharge is a valuable aid. A staphylococcus infection is usually mild. With a streptococcus infection the danger of mastoid involvement is greater and this is considerably so when the offending organism is the streptococcus mucosus capsulatus. The sign that Dr. Dench places great reliance upon as indicative of mastoid involvement is narrowing of the external auditory meatus near the drum. Another very significant canal sign is the apparent shortening of the meatus, a condition in which the entire drum membrane appears nearer to the entrance of the canal than under normal conditions (this does not refer to bulging). Finally, in every doubtful case of mastoiditis an x-ray should be taken. Two symptoms are regarded by Dr. Dench of considerable importance: persistent headache and sleeplessness, in course of or following otitis media. P. F.

1325

Roentgen Ray Diagnosis of Mastoid Disease. George S. Dixon, *Jour. Electrotherapeutics and Radiology*, Dec., 1916.

Of 288 cases reported positive the x-ray reading was confirmed in 201 on the operating table; in 37 there was no operation and 50 have been lost trace of or refused operation. At any rate, in all the operated cases not one was found negative. Of 115 negative cases the clinical symptoms warranted operation in 15, of which 8 gave positive findings and 7 negative findings on the operating table.

The method employed by the author aims to superimpose the internal on the external auditory meatus. This is done by placing the patient prone on the table with one arm flexed before the face and the other extended at his back on the table, the head resting on an incline of about 168. The tube is adjudged at right angle to the table, not to the incline, and the center at or a little below the parietal eminence. This throws out the opposite mastoid, shows the internal black and the external grey and larger surrounding it, gives a good outline of the mastoid process and enables one to locate the relative position of the sigmoid sinus without taking streoscopic plates. If the line marking the anterior border of the sinus groove is at right angle to Reid's base line the sinus is forward; if covered with cells it is deep; if it is clean cut and has no cells over it, it is rather superficial and if the groove does not show at all, it is shallow and probably well below the outer surface of the mastoid, but it is not likely to be forward as it must cut the petrous pyramid to be forward and it cannot do this without showing. Ed.

1332

Acute Mastoiditis and Facial Paralysis. G. Gradenigo, *Arch. ital. di Otol., Rinol. e Laringol.*, Aug., 1916.

Cases occur (1) where the lesions of the facial nerve in the internal auditory canal are accompanied by lesions of the cochlear and vestibular nerves; (2) where the nerve is injured in its course along the vestibular walls; (3) where the nerve is injured in its descending tract by infection of the mastoid cells. Gradenigo describes a case in which the facial nerve injury was brought about in the third manner. There was acute otitis media complicated by mastoiditis and during operation the descending portion of the facial nerve was found in direct contact with a small diseased cavity. The facial paralysis disappeared after fourteen days. At first it was thought that the otitis and facial palsy were distinct phenomena, but in view of the findings Gradenigo urges that in cases of facial paralysis with acute symptoms the middle ear and mastoid be thoroughly examined. Ed.

1335

Corroborative Diagnosis of Mastoiditis by Means of X-rays. Harold Hays, *New York Med. Jour.*, June 17, 1916.

The author cites cases to show the value of the x-rays in corroborating the clinical evidences of mastoid disease. He does not place all reliance upon the x-ray, but especially in atypical cases it is of great weight for or against operation. Furthermore, it shows the position of the sinus, the size and shape of the mastoid, etc. Ed.

1343

Chronic Suppurative Mastoiditis Accompanied by Intracranial Pressure. E. J. Lent, *Indiana State Med. Assn. Jour.*, July, 1916.

A case is reported in which operation disclosed a large cyst. The cystic contents were sterile. The patient presented symptoms of meningeal irritation and ultimately recovered. The author discusses cerebral cysts and divides them into parasitic, traumatic, apoplectic and degenerated neoplasms. Ed.

1394

Hemostasis in Sinus Injuries. Ritter, *Zentralblatt f. Chir.*, Nov. 25, 1916.

Ritter points out the drawbacks in military practice in controlling bleeding by tamponage of the sinus wound and the dangers of using clamps and ligatures. It has been proposed to allow the bone fragments to remain as a lesser evil, and their presence is usually well tolerated. By their strong compression of the sinus they form the best of hemostatics. But the same end would be gained if the fragments were promptly removed and a substitute inserted—bone prepared in advance. This should be far superior to a tampon which encourages the flow of blood and has to be changed. The author reports a case in which he removed a large piece of bone and then tamponed the sinus, the gauze being sutured in. Pus appeared in the stitches and the second tampon was found to be soaked with foul pus. After several days of non-improvement there was a gush of venous blood. Clamps, suture and ordinary tamponade gave no hope. Attempts to tampon between dura and skull proved fruitless. There were no bone plates ready and the author wedged some thin pieces of wood between bone and dura until all hemorrhage ceased. Gauze was loosely inserted into the wound with a slightly compressive bandage over all. The patient made an excellent recovery. The author made use of very thin slips of wood of the type of cobblers' chips, which had been previously boiled, so that compression could be gradually effected. The fate of the wooden plates is not mentioned. Ed.

1395

Lateral Sinus Disease: Three Interesting Cases. Archer Ryland, *Jour. Laryngol., Rhinol. and Otol.*, Aug., 1916.

These cases were lateral sinus thrombosis with extra-dural abscess, lateral sinus phlebitis with extra-dural abscess and lateral sinus thrombosis with cerebellar encephalitis. The latter case came to autopsy and the special points of interest with regard to it seem to be the following: (1) The difficulty of coming to a correct decision as to which temporal bone should be explored first. In this case the wrong decision was made and the left side was explored first. (2) Rapid masking of lateral sinus symptoms by cerebellar symptoms and the consequent greatly increased difficulty of diagnosing either condition. (3) Failure during the operation to discover the cerebellar focus. (4) Apparent absence of clot on opening the right lateral sinus during operation. (5) Decided bilateral optic neuritis. (6) Absence of spontaneous nystagmus. Ed.

1398

Fatal Case of Thrombosis of the Cavernous Sinus Secondary to a Furuncle on the Nose. E. Wacker, *Correspond.-Blatt fuer Schweizer Aerzte*, April 1, 1916.

A boy 12 years old noticed a small furuncle in the vestibule of the left side of the nose. Two days later the tip of the nose had become swollen and on the third day the entire left side of the face was swollen. On the fourth day there was left exophthalmos, chemosis, internal and external ophthalmoplegia and symptoms of meningitis. Staphylococcus septicemia. Autopsy showed left orbital phlegmon, thrombo-phlebitis of both cavernous sinuses, purulent meningitis, multiple lung abscesses. The author has been able to find only four similar cases in the literature. Ed.

1404

Tumors of the Third and Fourth Ventricles. Peter Bassoe, *Jour. A. M. A.*, Nov. 11, 1916.

The report deals with six cases of tumors of the ventricles of the brain. The first was one of the third ventricle (the patient was a boy of fourteen). The tumor, a soft glioma, filled the entire ventricle and caused secondary hydrocephalus. The others were tumors encroaching on the fourth ventricles, one of which gave a clinical picture of cerebellar tumor although the growth was a small one in the upper part of the fourth ventricle. Three of the cases were operated on, all with disastrous results. It seems that any sudden interference with the intracranial pressure conditions is dangerous and death from this cause as well as the difficulty of diagnosis place such cases generally in the inoperable class. The author, however, believes that theoretically at least removal of tumors of the fourth ventricles is not impossible as some of these tumors arise from the choroid plexus and are not attached to the walls and others are only attached above to the vermes, so that it would seem possible to enter the ventricle through the vermes provided the pressure in the posterior fossa is not too high at the time. Ed.

1429

Otitic Cerebral Abscess. Dr. Got, *Rev. de Laryngol., d' Otol. et de Rhinol.*, No. 10, May 31, 1916.

Four cases are described illustrating the different clinical types of cerebral abscess of otitic origin: latent type, meningitic type, cerebral and cerebellar type. Three of the cases were temporo-sphenoidal and these were cured by operation; the fourth case was one of cerebellar abscess with a fatal outcome. In discussing the symptomatology the author dwells especially on the difficulties of diagnosis in these cases. The abscess may be of the latent type and the symptoms so vague as not to direct attention to its presence; or, the development of the abscess may take place concurrently with extradural complications, the symptoms of which may mask those of the abscess. He discussed the various symptoms of brain abscess and points out that the two symptoms which are generally present, even when all the others are absent, are headache and slow cerebration. Upon these he places a great deal of reliance. Of course the entire history must be gone into very carefully and other conditions, especially co-existent extradural suppuration must be taken into consideration. Ed.

1430

Case of Otitic Cerebellar Abscess. A. Gradenigo, *Arch. ital. de Otol. Rinol. e Laringol.*, Nov., 1916.

In this case, occurring in a girl of twelve, the abscess was not complicated by other encephalic lesions. The symptomatology was quite clear, the most important symptoms on which the diagnosis was made being: constant absence of fever, absence of Kering's sign, rigidity of the neck, symptoms of intracranial pressure (choked disc and paralysis of diseased side), nystagmus directed towards the diseased side and the functional integrity of the corresponding labyrinth. Ed.

1433

Localization of Cerebellar Tumors. Ernest G. Grey, *Annals of Surgery*, Feb., 1916.

In twenty-three out of fifty-eight cases of certified cerebellar and extra-cerebellar tumor an unusual tilting of the head so that the ear approximated the corresponding shoulder was present. Of forty-three certified cases of tumor lying anterior to the cerebellum, three showed any tilting of the head and the degree of tilting was hardly noticeable. Hence, marked tilting of the head would seem to indicate, in a patient with symptoms of an intracranial tumor, the presence of a subtentorial new growth. Backward retraction of the head was present in eight out of sixty cases of cerebellar and extracerebellar tumor (typical opisthotonus in two of these) but a similar position was not observed in any of the cases of tumor anterior to the cerebellum. Suboccipital headache or pain was present in thirty-three cases (56 per cent) and in the cases of tumor anterior to the cerebellum this symptom was present in fourteen (31 per cent). Ed.

1435

Studies on the Localization of Cerebellar Tumors. II. The Pointing Reaction and the Caloric Test. ERNEST G. GREY, *American Jour. Med. Sciences*, May, 1916.

The caloric test has proved to be an important means of differentiating labyrinthine from intracranial disease. Together with the pointing reaction this test has been found of value, furthermore, in localizing circumscribed lesions in the cerebellum. The present report has to do with the results obtained from using these tests in thirty-one patients with cerebellar or extracerebellar tumor. In most of the patients having cerebellopontine new growths and in certain of those with tumors of one or the other hemisphere, the reactions were sufficiently characteristic to be of supplementary value in localizing the disease. In other patients with intra- or extra-cerebellar tumor, on the contrary, the results were often ambiguous and afforded no assistance in establishing a diagnosis. In fact, in numerous instances the conclusions drawn from these results were at variance with the other physical findings, and had any great reliance been placed on them would have led to erroneous results. There are probably a number of factors responsible for the occurrence of atypical reactions in patients with certified cerebellar tumors. The most important is the great increase in intracranial pressure due to an internal hydrocephalus which ultimately accompanies new growths in the posterior fossa, and secondly, the diffuse nature of many of the tumors common to the cerebellum. ED.

1436

Studies on the Localization of Cerebellar Tumors. V. The Cranial Nerves. E. G. GREY, *Johns Hopkins Bull.*, Sept., 1916.

Anosmia is usually a distant symptom due to a secondary internal hydrocephalus and has no appreciable significance for the localization of a new intracranial growth.

Choked disc has in itself no localizing import, but with other signs it will point to subtentorial growths. Very little reliance can be placed on the involvement of the third or sixth cranial nerves as a guide to the side occupied by a new growth in the posterior fossa.

The nystagmus seen in cerebellar disease is very frequently of cerebellar origin. Many exceptions occur to the rule that the movement is slower and coarser with the eyes turned toward the tumor, but a persisting and definite difference in the size and rate of jerks suggests the side of the lesion.

Impairment of the conjugate deviation has little importance for localization. Involvement of the fifth nerve has no topographical importance unless the tumor lies in the cerebellopontine angle.

Paresis or paralysis of the facial nerve is strong presumptive evidence of the side of the lesion, and especially so when the eighth or the fifth nerve of the same side is also affected.

A slight unialteral impairment of hearing, appearing for the first time in connection with general pressure symptoms, is indicative of a lateral tumor.

Great impairment or loss of hearing in one ear under similar circumstances points to a lateral extracerebellar tumor, and especially so when the seventh or fifth nerve of same side is involved. Tinnitus is not a reliable guide.

Vertigo is a prominent symptom of subtentorial growths, but has no significance for localization. The presence of dysarthria and dysphagia is no contraindication to operation. They are two striking symptoms of intra and extra cerebellar new growths.

Involvement of the spinal accessory nerve is rare and corresponds to the side of the growth.

A weakness of the muscles supplied by the twelfth nerve is of no localizing significance. Ed.

1437

Acute Cerebellar Ataxia in Children; Report of a Case with Rapid and Complete Recovery. J. P. Crozier Griffith, *Amer. Jour. Med. Sciences*, Jan., 1916.

The patient was a girl five years old. The noteworthy features in the case were the rapid development of symptoms without discoverable cause, unless they could be attributed to influenza which the child had had; the very uncommon degree of nystagmus; the ataxia of the extremities; disturbances of sensation; affection of speech; slight increase of reflexes, and the rapid recovery. As regards the nystagmus, examination showed that this was not of otitic origin as the nystagmus circuit was intact on both sides, indicating normal semicircular canals, eighth nerves, region of Deiter's nucleus, the posterior longitudinal bundle in the pons and its connection with the third and fourth nuclei. The nystagmus was lateral and vertical accompanied by a curious fluttering of the eyelids. Recovery was complete in one month. Treatment consisted of a purgative, administration of sodium bromide, bicarbonate of soda and enterocylsis. Ed.

1440

Roentgenography in the Localization of Brain Tumor Based Upon a Series of One Hundred Consecutive Cases. G. J. Heuer and W. E. Dandy, *Johns Hopkins Hosp. Bull.*, Nov., 1916.

The authors' findings show that roentgenograms of the head are an important aid in the diagnosis of brain tumor (45 per cent of cases). Uncalcified tumors do not cast shadows in the roentgenograms unless tumor tissue has invaded the accessory sinuses (except in hypophyseal lesions which are viewed against the dark temporal fossa). Calcified or bony lesions cast shadows which are easily recognized (6 per cent of brain tumor cases). Signs of intracranial tension occur rarely in cerebral tumors but are the usual accompaniment in posterior fossa tumors. Combination of eye changes and local sellar destruction or enlargement makes the diagnosis most certain in all intracranial conditions. Local hypertrophy of the skull and local atrophy of the skull over tumors are of definite diagnostic importance (hypertrophy in 4 per cent of cases; atrophy in 2 per cent). Ed.

1451

Intracranial Complications in the Course of Suppuration of the Accessory Sinuses of the Nose. Erick Knutsen, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

Six cases of meningeal and cerebral complications in the course of nasal accessory sinus suppuration. In two cases there was diffuse purulent meningitis following frontal sinusitis. In another case there was an acute pansinusitis with osteritis of the frontal, maxillary and ethmoid bones following a subperiosteal abscess in the frontal region, orbit and nasal fossa and finally a serous meningitis with marked symptoms. In two cases the complications followed an old ethmoiditis which caused an osteitis and a pachymeningitis consecutive to a frontal lobe abscess. The sixth case was one of chronic frontal sinusitis and chronic pachymeningitis. ED.

1453

Otogenous Pyemia without Sinus-Phlebitis. J. E. KRAG, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

Patient, girl, 4 years old. Acute otitis media both ears. Double mastoid. Abscesses in neck, right forearm and left arm. Fatal outcome. Autopsy showed sinus and jugular bulb on both sides healthy. ED.

1471

Gas Abscess of the Brain. EMMANUEL RYCHLIK, *Munchener mediz. Woch.*, Nov. 28, 1916.

A soldier received, through the explosion of a grenade, many septic wounds of the body and a slight superficial wound on the head, over the right temple. He developed high temperature and symptoms leading to a diagnosis of frontal lobe abscess (paresis of the left facial nerve and of left arm and leg). The wound was incised under a local anesthetic and the right temporal lobe exposed. The dura was tense, but not pulsating; it was pierced by small fragment of bone. Stinking, haemorrhagic and foam-like pus flowed from the wound. The whole right temporal region was occupied by the abscess, into which the whole finger, and the forceps could be put; a smaller cavity was found beside this large one. The abscess cavity was syringed with hydrogen peroxide, and a thin drainage tube inserted; the cavity was sponged out with gauze dipped in Chlumsky's solution: Acidi carbolici 30, camphorae trit. 60, alcohol. absol. 10 parts. The temperature was normal next day, and remained so. The man could sit without assistance, speak, write, and count quite correctly. The first change of dressing was made ten days after operation; a great deal of pus, with necrosed brain tissue, was discharged. No symptoms of any kind, either mental or physical, were afterwards exhibited, despite the great defect in the frontal and temporal lobes. Optic neuritis was present on each side, but more severe on the right. Fraenkel's gas bacillus has been observed to attack only the extremities, and, internally, only the uterus. Tietz and Korbsch, in a case of skull wound, found air bubbles in the pia mater, and concluded that the bacillus affected the pia mater; but their conclusion was based solely on the presence of air vesicles in the venous channels underneath the pia, and by the sickeningly sweet smell. Fraenkel himself said that the smell did not indicate the presence of his bacillus, that the vesicles might be admitted underneath the pia by the sucking in of air at the opening of the skull after death, and many of the phenomena might be explained by *post-mortem* putrefaction. Rychlik points out that in his case all the conditions necessary for gas inflammation were fulfilled —the complete exclusion of air, so that the organism grew under strictly anaerobic conditions. Signs of toxaemia were absent, and the high temperature alone indicated septic mischief. The sudden development of such a large abscess could only be explained by the structure of the brain tissue and the gas-producing properties of the organism. Ed.

1472

Observations in the Diagnosis and Treatment of Brain Injuries in Adults.

William Sharpe, *Jour. Amer. Med. Assn.*, May 13, 1916.

The author combats the notion that brain injuries following fracture of the skull get along just as well without operation as with it. This, he holds, is true if the operation has been delayed until they reach the dangerous state of medullary compression or even the later stage of medullary edema. An early operation is advisable not only as a means of saving life but also to lessen the danger of post-traumatic conditions which are, he believes, due to the resulting unrelieved intracranial pressure prolonged over several weeks or more. He reviews the symptoms that guide the surgeon and the other treatment. It is in fractures of the base that there has been the greatest difference of opinion as regards operation, and until recently it has only been realized that the fracture itself is of less consequence. It is the resulting hemorrhage and edema that are the dangerous complications of basal fractures. Decompressive operations, therefore, are advisable. In his seventy-nine patients operated on he has been impressed by the absence of extradural and middle meningeal hemorrhage unassociated with subdural lesions, which he thinks is a more uncommon condition than our textbooks would lead us to believe. In the great majority of cases many of the important guiding or localizing symptoms are absent and in that case if there are any signs of increased pressure in the skull, early subtemporal decompression is advisable. It is rarely possible to observe the fundal signs of choked disc within six hours after the injury and the signs of shock often overshadow or prevent the signs of increased intracranial pressure. The fracture itself is really the unimportant factor.

All depressed fractures of the vault should be elevated and removed for fear of later complications. Ed.

1486

Otogenous Meningitis.

G. V. Th. Borries, *Nordisk Tidskrift for Oto-Rhino-Laryngol.*, Nos. 2, 3 and 4, 1916.

Thirty-six cases. Six post-operative and two traumatic. Of the remaining twenty-eight fifteen cases complicated acute otitis media and thirteen cases chronic otitis media (15 labyrnthne, 10 tympanomastoid, 3 sinus phletitis origin). Seventeen of the twenty-eight cases presented neither edema nor sensitiveness of the mastoid and eleven of these seventeen showed no acute symptoms in the ear. In ten cases the cerebrospinal fluid was sterile. In nineteen cases bacteria were present (streptococci, 9 cases; streptococcus mucosus, 2 cases; streptococci and gram positive diplococci, 2 cases; staphylococci, 4 cases; staphylococci and gram negative rods, 1 case; gram negative rods, 1 case; gram negative rods and gram positive diplococci, 1 case; gram positive diplococci, 1 case). The author states that the cerebrospinal fluid may be turbid and sterile and that if it is so for two or three days, it will probably remain sterile. A case is reported in which the fluid had this character for seventeen days as proved by lumbar puncture on six occasions even on the day of the patient's death. Ed.

1496

Inhibitory Action of Saliva on Growth of the Meningococcus. M. H. Gordon, *British Med. Jour.*, June 17, 1916.

1. Normal saliva inhibits growth of the meningococcus upon solid artificial culture medium (nasgar).
2. Saliva from carriers has a similar action.
3. Nasal mucus from normal persons has no such inhibitory effect on the growth of meningococcus.
4. A quantitative experiment showed that fresh saliva does not entirely lose this inhibitory influence when diluted a hundred-fold.
5. So pronounced is the antagonism of saliva to growth of the meningococcus in culture, that in a given experiment a volume of broth suspension containing living meningococci at the rate approximately of 1,000 million per c.cm. was prevented from growing by admixture with an equal volume of fresh saliva.
6. This antimeningococcal action of saliva is due to its living bacteria.
7. A young broth culture from saliva is at least as efficacious as fresh saliva is antimeningococcal action.
8. This effect is due to the living and multiplying bodies of the bacteria in the broth. When they have been separated off by a Berkefeld filter, or killed by heat, the broth has lost its antimeningococcal power.
9. The inhibitory action of saliva appears to be chiefly due to mixed salivary streptococci. Pure cultures of the predominant streptococci, when tested individually, were found to exert comparatively slight inhibitory influence on the growth of meningococcus.
10. These observations demonstrate the practical importance of avoiding contamination with saliva when swabbing the nasopharynx of suspected carriers of the meningococcus. Ed.

1499

Circumscribed Cysts of the Leptomeninges, with Report of a Successful Operative Case. F. M. Hanes and A. M. Willis, *Amer. Jour. Med. Sciences*, Dec., 1916.

The exact etiology of circumscribed cystic formations is uncertain. The pia-arachnoid spaces of the brain and cord form a true serous cavity analagous to the pleural and peritoneal spaces and it is reasonable to assume that the delicate leptomeninges as a result of either septic or aseptic inflamatory processes form adhesions which may produce single or multiple cysts. Trauma has closely preceded the development of certain cases of cystic meningitis. Pain has been a prominent feature of most of the cases recorded, but this symptom was entirely absent in the patient operated on by the authors. Ed.

1509

Advantages of Repeated Lumbar Puncture in the Treatment of Epidemic and Other Meningitis. H. Mühsam, *Berliner klinische Wochenschrift*, Nov. 27, 1916.

Repeated lumbar puncture the author regards as equivalent to free incision and drainage in other parts. He has never seen any ill results by taking even as much as 100 c.c. at a time. These large tappings unburden the nerve centers which are compressed by the serous exudation, secure complete drainage for all the diseased products and bacteria and cause the appearance within the diseased area of the natural defensive bodies. He advises lumbar puncture daily. His death rate was 5 per cent. Ed.

1512

Purpuric Form of Cerebrospinal Meningitis. Dr. Netter, *Revue de Medecine*, March, 1916.

Purpuric manifestations indicate that the disease has become generalized as proved by the demonstration of the meningococcus in the cutaneous lesions and in the blood and by the co-existence of other extra meningeal conditions (iridocyclitis, arthritis, endocarditis). Ed.

1526

Toxic Action of Dilute Sodium Chlorid Solution on Meningococcus. C. Shearer, *Lancet*, Oct. 7, 1916.

Almost all strains of meningococcus are killed when placed for a short time in dilute sodium chlorid solution. The action of the Na Cl seems to be most toxic when the concentration is 0.85 to 0.9 per cent. It was found that fresh cultures were more easily destroyed than old cultures. On the other hand, the toxicity of the Na Cl can be readily neutralized by the addition of a bivalent salt, for example, calcium chlorid, with or without the addition of a small amount of potassium iodide. Ed.

1528

Influenzal Meningitis, with Report of a Case. Robert G. Torrey, *Amer. Jour. Med. Sciences*, Sept., 1916.

Patient a girl eleven years old. She had apparently had a severe attack of influenza with a frontal sinus infection followed by typical cerebrospinal meningitis. The spine was tapped thirteen times and the influenzal organism was present up to the last two tappings. There was an improvement in the symptoms following each tapping. Antimeningococcic serum used. Recovery was apparently complete with no nervous symptoms remaining.

Regarding treatment there are three measures which deserve serious consideration: (1) The anti-influenzal serum of Wollstein, whose action appears to be specific. (2) Hexamethylenamin, which is, however, of lesser value. (3) Repeated lumbar puncture. Ed.

1536

Value of Lumbar Puncture in Cranial War Wounds. R. Leriche, *Jour. de Chir.*, p. 451, 1916.

The author's observations on chemical and cytological examinations of the cerebrospinal fluid in injuries to the skull show that such examinations have no diagnostic value. But the repeated punctures have a therapeutic effect and this is, of course, of greatest value to the patient. Ed.

1539

Operative Treatment of Cranial Gunshot Injuries. F. Muller, *Beitr. z. klin. Chir.*, Bd. C, 1916.

One hundred and eighty gunshot injuries of the skull were treated by the author in eleven months. Because of the fact that such injuries may for a long time give no indication of dangerous injury to the brain he made it a routine to expose every cranial injury no matter how harmless it may have appeared. Thirty-one of the 180 cases died, all except one from the direct results of the injury, most of them from brain complications. These complications were clinically of two types: one fulminating in character, the other insidious. Of gunshot injuries involving the brain 61 per cent recovered; with secondary operations 33 per cent recovered. Hence the importance of primary operation. Cases in which the bullets or other missiles remained in the brain showed 70 per cent mortality. Ed.

1546

Radiography in Gunshot Wounds of the Skull. Vilvandre, *Arch. de Radiol et d' Electrotherap.*, Feb., 1916.

No matter how obvious the clinical signs are to trephine a skull for a depressed fracture without preliminary x-ray examination is irrational. The relief of decompression may be obtained in a few hours, but if the patient still has a bullet or piece of shrapnel in his brain the prognosis is not really improved. At the same time, while recognizing the importanec of radiography previous to operation in skull cases, there are cases in which x-rays apparently fail. Even a good radiogram may be negative when the clinical symptoms point to the presence of a depressed fracture, and the failure is still more obvious in the case of a small linear crack or fissure. Damage to the skull, furthermore, is, as a rule, more extensive than can be shown in the radiograph, probably owing to the incidence of the rays on a round body. The author has noticed, in operating theater and wards, that skulls with long comminuted fractures —even skulls in which the depression is great—do well provided no foreign body is present. The connection between extensive fracture and good recovery has impressed the author, and he suggests that long fractures may be more efficient in relieving pressure than localized small trephining of one inch or so in diameter. A widespread decompression of a moderate degree may perhaps be better than decompression of a greater degree in a smaller area. In the cases of which he is thinking the bone remains in place, being only lifted up through intracranial pressure. The natural juxtaposition of the bone to the dura, and of the latter to the grey matter, persists to a great extent in such cases, and tends to prevent hernia cerebri and its sequelae of brain destruction and sepsis. The author wonders whether the lifting up of a large area of bone and replacing it after the necessary cleaning of clot and removal of loose bodies is not to be preferred to the trephining and removal of bone by the ordinary method. Future callus may entail further compression, but many fractured skulls, untouched by the surgeon, do well, and the sufferers go through life without further symptoms, except some slight headache. Ed.

1549

Opening the Lateral Ventricle; Report of Two Cases. H. F. Woolfenden, *Lancet*, May 20, 1916.

In both cases the lateral ventricle was opened for the purpose of extracting a bullet which had lodged therein, together with some splinters of bone. Both patients made complete recoveries except for a slight affection of the higher speech centers in one case and some loss of pain sensation on the left side in the second case. Ed.

1551

A Semicircular Canal Indicator. J. W. Downey, Jr., *Jour. Amer. Med. Assn.*, Oct. 21, 1916.

This instrument consists of models of the canals mounted on the bows of a trial frame. With the trial frame fitted to the patient the canals are in approximately the correct position, and a glance will show the ones that are being acted on by rotation, or the douching, in any position of the head. It has the advantage over the Brünings otogonimeter in that it is not in the way in any position it may be desired to place the patient's head, and though not so accurate mathematically it is vastly superior in demonstrating the position in space of the various canals to those who are not constantly visualizing the anatomic peculiarities of the internal ear. Ed.

1554

A Damper for Testing Hearing by the Whispered Voice. P. J. Mink, *Arch. f. Ohren, Nasen und Kehlkopfheilkunde*, Bd. 100, H. 1 and 2, Nov. 21, 1916.

In view of the variability in the intensity of the whispered (as well as the spoken) voice at different examinations Mink arranged an apparatus in the shape of a small megaphone which fits around the lips of the examiner. This appliance has a damper on it by means of which he is able to obtain a whisper of the same degree at any time. Ed.

1560

A Prosthetic Apparatus for the Correction of Nasal Deformities. A. Herpin, *Bull. et Mem. de la Soc. de Med. de Paris*, Oct. 27, 1916.

It consists of two lateral blades of vulcanized rubber, to rest on the lateral aspects of the nose, and two smaller blades, to rest within the nostrils and afford counterpressure. The two blades of each side are connected by springs of platinized gold wire, the two springs being, moreover, joined at their centers, somewhat above the tip of the nose, by a small metallic disc. By suitable curving of the wires, the device is made to hold in place and exert pressure from without inward on the sides of the nose. With moderate pressure, insufficient to harm the tissues, apreciable results are obtained in a short time. Local skin elevations are flattened down, and the tissues forced back toward the midline, imparting greater laxity to the skin and favoring subsequent corrective operations, if such are to be undertaken. Where the alæ nasi have also been deformed in the process of healing and show a tendency to atresia, the same apparatus is employed, but with a modified intranasal portion. The latter is split on each side into two median and lateral halves, united by a spring wire, which tends to broaden the nostrils and restore their shape to normal. Ed.

1569

An Improved Instrument for Maintaining an Oral Air-way during General Anesthesia. J. E. Lumbard, *Medical Record*, Nov. 25, 1916.

The instrument consists of a double row of three curved wires running parallel, about an eighth of an inch apart and held together firmly by three cross-bands. It is 4½ inches long, ½ inch wide and ⅛ inch thick. The instrument is easily introduced by inserting the pharyngeal end between the tongue and soft palate until it rests in the pharynx. The instrument does not interfere with any face mask nor with any method for administering a general inhalation anesthetic. It will not clog with mucus, is easily kept in position, it cannot be compressed by the teeth or gums and may be used in children as well as in adults. ED.

1618

Thymus Death. F. H. FALLS, *Surg., Gyn. and Obstet.*, June, 1916.

The symptoms are those referable to an enlarged thymus causing pressure upon the mediastinal structures with or without the associated changes found in status lymphaticus. Symptoms may be present at or shortly after birth and usually appear during the first year. They may appear suddenly in a previously apparently normal child or gradually with increasing severity. The cases of sudden death without premonitory symptoms are usually cases of status lymphaticus plus thymus hyperplasia. Treatment by irradiation with the x-rays has been tried with some success, but this should be restricted to older children and adults because of the destruction of thymic tissue by the irradiation. Hence x-ray exposure should not be undertaken in young children. If surgical removal is attempted the whole gland should not be removed because of the metabolic disturbances that follow, as shown by the experimetnal work of Klose and Vogt. ED.

1627

Hypertrophy of the Thymus. A. GISMONDI, *Gaz. degli Osped. e delle Cliniche*, No. 104, Dec. 28, 1916.

Hypertrophy of the thymus produces symptoms by direct compression of the trachea and the jugular veins and of the veins carrying blood from the brain and arm, thus impeding circulation in the thymus itself. In this way a vicious circle is set up which tends to aggravate the mechanical disturbances. In younger children, painting with iodin may induce a retrogression in the thymus. In older children prompt results can be obtained by x-ray exposure, but the dose should not be more than 5 or 6 H units at one sitting and the total should not be more than 20 units. Aluminum filter should be used. Some men have reported good results from small daily doses of epinephrin, and Pende combines epinephrin with hypophysis extract having noticed that this combination seemed to have a special inhibitory influence on hypertrophy of the thymus. ED.

1634

Microscopic Analysis of the Thymus in Sixteen Cases of Mostly Sudden Death from Internal Causes. J. O. HAMMAR, *Svenska Lakars Handlingar*, V. vlii, No. 3, 1916.

The thymus in the cases of sudden death from internal causes differed in no respect from the thymus in healthy children. Not even in two cases of "thymus death" could anything be found to incriminate the thymus. The author concludes, therefore, that the thymus was not responsible for the sudden deaths. ED.

1641

A Further Report on Thromboplastin Solution as a Hemostatic. ALFRED F. HESS, *Jour. Amer. Med. Assn.*, Dec. 9, 1916.

Thromboplastin is a solution and a fine suspension of ox brain in normal salt solution with 0.3 per cent tricresol added as a preservative.

It has been employed extensively in nasal hemorrhage (as well as in gastric, duodenal and other hemorrhages) with excellent results. In hemophilia it may be regarded as a specific wherever it can reach the site of the bleeding. Ed.

1642

Blood and Blood Vessels in Hemophilia and Other Hemorrhagic Diseases. Alfred F. Hess, *Arch. Internal Medicine*, Feb., 1916.

The coagulation time of the plasma in hemophilia may become normal without any apparent change in the condition of the patient. A blood platelet count is of differential value between purpura and hemophilia. In purpura the blood platelets are decreased; in hemophilia normal. The puncture test is also an aid in differentiation (in hemophilia a hemorrhagic area rarely results from the puncture; in purpura it is the rule). The capillary resistance test is also of value (application of tourniquet). In purpura this causes petechial hemorrhages on the forearm, whereas in hemophilia the effect is negative. There is an hereditary purpura as well as an hereditary hemophilia. The male member may be hemophilic and the female purpuric. Ed.

1644

Thymic Disturbances in the Adult. G. H. Hoxie, *New York Med. Jour.*, April 8, 1916.

The thymus attains its greatest size at the second year and atrophies at purberty. A persistent gland in adult life is characterized by weakness, shortness of breath and intestinal sluggishness. The diagnosis is made by percussion and x-ray examination. Ed.

1670

The Use of Warmed Ether Vapor for Anesthesia. F. B. McCarty and B. F. Davis, *Ann. Surg.*, March, 1916.

The purpose of the authors' investigations was to determine whether ether vapor warmed to body temperature possessed any advantages over ether vapor as ordinarily administered. There being four standard methods of administering ether, closed ether, open or drop ether, intrapharyngeal insufflation and intratracheal insufflation, their problem was to determine, first, the temperature at which unwarmed ether is delivered to the patient by the various methods, the degree of warming which occurs in the air-passages and the amount of energy used in so warming the vapor; second, to observe the effects of warmed and cold vapor on animals as regards the quantity of ether required to induce and maintain anesthesia. local irritation and the effect on body temperature. Their results showed that (1) the amount of heat required to warm ordinary vapor as used in anesthesia by any of the four methods is so small as to be a negligible factor in lowering body temperature and inducing shock in anesthetized patients. (2) The warming of ether vapor, however administered, is accomplished in the mouth, pharynx, trachea and primary bronchi and the anesthetic reaches the alveoli at body temperature. (3) The quantity of ether required to produce and maintain anesthesia does not appear to be materially influenced by warming ether. (4) So-called cold ether does not appear to be more irritating to mucous membranes than warmed ether. (5) No more mucus and saliva are secreted when anesthesia is induced and maintained with cold than with warmed ether. Ed.

1676

The Blood Plateletes in Hemophilia. G. R. MINOT and R. I. LEE, *Arch. Internal Medicine*, Oct., 1916.

Previous work had shown that the formed elements of the blood, the calcium and fibrinogen content, and the thrombin and antithrombin were practically normal in hemophilia. The platelets were abnormal. Addition of hemophilic platelets to hemophilic plasma in amounts even seventy-five times as large as normal platelets, never reduced the coagulation time to anywhere near normal. The evidence obtained suggested that the delay in clotting in hemophilia takes place in the initial step and is due to some interference with the platelets. The authors consider hemophilia the result of an hereditary defect in the blood platelets which renders them inavailable or slowly available for clotting purposes.

ED.

1695

Thymus Disease in Children; Case of Thymus Hypertrophy. H. B. SHEFFIELD, *Arch. Diagnosis.* Oct., 1916.

Hypoplasia, by inducing a reciprocal diminution in the thyroid secretion, produces arrest of growth, frailty of the bones, general debility, and lowered mental capacity, as exemplified in infantilism, particularly the Brissaud and Lorrain types. In thymic hyperplasia, the signs differ both according to the degree of enlargement and the functional activity of the thymus. Thymic hypertrophy may not be associated with increased function of the gland, which may, instead, be functionally incapacitated. Even where thymus secretion is excessive the symptoms caused vary greatly. Through a corresponding increased activity of the thyroid the symptoms may be confined to those of hyperthyroidism, viz., tachycardia, insomnia, altered disposition, abnormal perspiration, often slight exophthalmos, and possibly struma. In other thymic hyperplasia cases, examination reveals nothing but a few signs of rachitis or scrofulosis, in spite of which death may inexplicably occur from mild causes such as a serum injection, narcosis, or a minor operation (status lymphaticus). No definite signs characterize this condition either during life or at necropsy. In another group of cases of thymic hyperplasia percussion reveals marked dulness over the upper portion of the sternum, particularly to the left as low as the second rib and often also to the back between the scapulæ. In addition, there are swollen lymph glands in the lower lateral region of the neck, which may sometimes be seen to continue deeply down between the clavicle and the side of the sternum. In long standing hypertrophy, secondary manifestations, such as dilatation of veins of the neck, dislocation of the heart, accentuation of auscultatory signs of the heart and lungs, and arching and distention of the thorax, may be detected. The thymus occasionally becomes palpable as an arched elastic swelling in the midline above the incisura sterni. Thymus enlargement is distinctly discernible with the Roentgen rays. Encroachment on the thyroid, vessels and nerves, trachea, and bronchi cause signs special to each. As a rule, the symptomatology is essentially that of cardias asthma (asthma thymicum). ED.

1697

Hysteria from the Otologic and Rhinologic Standpoint. F. SIEBENMANN, *Correspond. Blatt fuer Schweizer Aerzte*, Sept. 30, 1916.

Differentiation is most difficult when the manifestations of the hysteria are restricted to the ear. We must be on the alert when the objective findings do not seem to justify the intensity of the subjective symptoms. The author is convinced that we are deceived into doing needless operations on sound accessory sinuses more often than the literature records. All are agreed that when the hysteric nature of the trouble is learned the patient should be handed over to the psychiatrist. Cold douches and other brusque methods may exceptionally cure, but sham operations should not be attempted. He describes in detail the case of a young woman who had otitis in childhood and later simulated gastric ulcer and pulmonary tuberculosis, and had operations for gastric trouble and three mastoid operations. A second young woman had chronic otitis media on one side and secured seven operations on the mastoid or accessory sinuses. The consequence is deafness on that side and paralysis of the face and tongue from operative injury. Both these women became addicted to morphine. In a third case a boy of twelve became totally deaf after the explosion of a bomb from an aeroplane. He was unable to speak and presented a number of sensory and vasomotor cerebellar symptoms. This condition persisted rebellious to all measures for eight months. A complete change of environment—to the children's ward of a hospital—and local treatment of a catarrhal affection of an Eustachian tube almost at once restored conditions to clinically normal. He did not improve when placed in a private room in the hospital. ED.

1698

Cachexia from Destruction of the Pituitary. M. SIMMONDS, *Deutsche mediz. Woch.*, Feb. 17, 1917.

Simmonds reports two more cases (one case was reported two years ago) in which the only cause discovered at autopsy for the chronic cachexia was total destruction of the pituitary, in one case the result of embolism and in the others due to tumor growth. ED.

1715

The Internal Anatomy of the Face. DR. M. H. CRYER, Professor of Oral Surgery, University of Pennsylvania; Oral Surgery to the Philadelphia General Hospital. Philadelphia and New York: Lea & Febiger, 1916.

The marked favor with which the first edition of this book was received and the great demand for it as a work of reference has necessitated the issuance of a second edition. The present volume has been decidedly enlarged, new chapters having been added on the teeth with their nerve and blood supply, on the distribution of the fifth nerve, on the uses of frozen sections and on the inter-relations between the nasal cavity and its accessory sinuses. When we recall that this work by Dr. Cryer is the fruit of twenty years of painstaking study of hundreds of skulls, coupled with infinite patience and minuteness of observation, the source of its mass of information becomes evident. As a work on special anatomy it occupies a very important place in the rhinologist's and oral surgeon's library. ED.

1718

Cerebellar Abscess. Its Etiology, Pathology, Diagnosis and Treatment, Including Anatomy and Physiology of the Cerebellum. Dr. Isidore Friesner, Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital and Post Graduate Medical School, New York; and Dr. Alfred Braun, Adjunct Professor of Laryngology, New York Polyclinic, Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital, etc. New York: Paul B. Hoeber, 1916.

There are two important reasons for the appearance of this monograph on cerebellar abscess. First, fully ninety-eight per cent of cerebellar abscesses are otitic in origin. Second, the advances that have been made and the work still going on in cerebellar physiology and the relationships between the static labyrinth and the cerebellum. In fact, the subject of neurology has assumed not only a most fascinating study, but one of paramount importance in otology and the surgery of the brain.

The book is divided into five chapters: I Anatomy of the Cerebellum; II Physiology of the Cerebellum; III Etiology and Pathology of Cerebellar Abscess; IV Symptoms of Cerebellar Abscess; V Prognosis and Treatment of Cerebellar Abscess. The book makes available a detailed description of the pointing test as worked out by Barany.

To him who strives for proficiency in neurotology this book is certainly one of the prerequisites. Ed.

1727

Surgery and Pathology of the Thyroid and Parathyroid Glands. Dr. Albert J. Ochsner, Professor of Surgery, Medical Department of the University of Illinois, and Dr. Ralph L. Thompson, Professor of Pathology, St. Louis University School of Medicine. St. Louis: C. V. Mosby Company, 1916.

In view of the great interest that surgeons and pathologists are concentrating on the thyroid and parathyroid glands the present volume should meet with a great deal of appreciation. The literature on these glands, especially from the surgical and physiologico-chemical aspects, has become very voluminous. Of the two glands the thyroid has of course received most attention. The parathyroids have been too long neglected both in medical text-books and medical teaching, and this perhaps because of the fact that our knowledge of them is still rather experimental in nature. But a comprehensive work on the subject is certainly timely and needful. Drs. Ochsner and Thompson's work fulfills this need in a masterful way and promises to prove to be one of the very important books published during the last year or two.

It is divided into two parts. Part one, comprising about 197 pages, is devoted to the thyroid; part two, approximately of equal volume is devoted to the parathyroids. This section as well as the chapter on pathology of the thyroid was written by Dr. Thompson who, by the way, has been a prominent contributor to investigations in this field. The clinical considerations of the thyroid and the non-surgical and surgical treatments of goiter are the work of Dr. Ochsner.

In describing the technique of thyroidectomy only those methods have been chosen in which Dr. Ochsner's wide experience of more than a score of years have been found reliable. This chapter is truly classic in its clearness of expression and exposition of technique. The steps of the operation are outlined also with the aid of thirty half tone plates.

The section dealing with the parathyroids takes up in order anatomy (human and comparative), embryology and histology, pathologic histology, cysts and tumors, postoperative tetany, medical tetany, parathyroid therapy, etc. It is essentially an analysis of experimental evidence regarding the role of the parathyroids in the human economy. As a presentation of our present views on this important question this section occupies a most important place in medical literature, and contains a very complete bibliography of the subject.

Certainly the co-authorship of the book could not have been more happily arranged and the authors are to be congratulated in this respect. Praise is also due the publishers for the excellent printing of the book.

Ed.

1730

A Manual of Otology. Dr. Charles E. Perkins, Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital, etc. Philadelphia and New York: Lea & Febiger, 1916.

This work is not one of the largest on diseases of the ear, but it is certainly one of the most comprehensive. The student, general practitioner or young specialist will find it a very efficient working manual. Excessive verbiage has been scrupulously omitted. The text is concise and to the point and the information is presented in a most understandable and matter of fact way. There are certain chapters in the book which deserve special commendation. For example, the one on the functional tests of audition and the one on the functional tests of the static labyrinth. There are books which make these subjects so complicated and difficult that any reader but a mature otologist or neurologist becomes bewildered and gives up all hope of ever understanding them. Not so in this book. Even a medical sophomore could grasp the principles very comprehensively by carefully reading the chapters through. Of course, the subjects are considered in a more elementary manner and from the standpoint of their practical application, but that is exactly what the scope of this book is, to be a working manual to the non-specialist or to the student. The chapters on the mastoid operation, simple and radical, are very explicit. So also those on the various varieties of labyrinthitis and intracranial complications. Ed.

1732

Oral Abscesses. Kurt H. Thoma, D. M. D., Lecturer on Oral Histology and Pathology and Member of the Research Department of Harvard University Dental School; Instructor in Dental Anatomy, Harvard Medical School; Oral Surgery to the Robert B. Brigham Hospital, etc. Boston: Ritter & Company, 1916.

In times gone by the medical profession regarded the mouth and teeth as of secondary importance in the practice of medicine; in fact, their examination was usually superficial and consisted in noting whether or not the tongue was coated, whether or not the tonsil was inflamed. The mouth was relegated to the dentist as his domain. But things have changed. The mouth and teeth have assumed the position of most important gateways for the entrance of disease. The presence in the teeth and other parts of the oral cavity of latent foci of infection has explained many obscure cases of sinus disease, otitis media, trifacial neuralgia, adenitis, diseases of the eye, of the blood, of the joints, etc. The sharp dividing line between dentistry and medicine has been broken down; oral surgery is a specialty in medicine. No wonder then that as oral infections have taken such an important place in the etiology of disease, a book devoted to oral infections and their complications should make its appearance.

Such a book is Dr. Thoma's work on "Oral Abscesses." From the quality of paper and the wealth of costly plates (there are seventy-nine of them, twenty-two being in color) it is quite evident that the publishers have spared no pains or expense in the publication of this volume. Careful perusal of the work leads to the conclusion that they were fairly justified in their lavishness. The book is destined to meet with general favor as one of the pioneers in this important branch of medicine. It has no partisanship. It interests the physician and the surgeon just as much as the dentist and he will be surprised to find how much there is to the pathology of the teeth.

The book opens with a consideration of the phenomena of infection. That infection may result not alone from neglect of the teeth but also from overdentistry of the teeth we learn from the following: "Oral abscesses, especially of the unsuspected chronic type, are in these days of overdentistried teeth a common infection and are of the greatest importance in the diagnosis and treatment of secondary disease * * *." Then follows in order a very detailed exposition of alveolar abscess (caused by disease of the dental pulp and to causes other than this etiology), abscesses of the tongue and salivary glands and ducts, bacteriology of oral abscesses, histological pathology of dento-alveolar disease, secondary complications, treatment of oral abscesses, prevention of periapical infection, devitalization of teeth, etc.

The author has a chapter devited to abscess of the tongue and salivary glands and ducts. Either this should be omitted or with equal propriety a very important form of oral abscess—peritonsillar abscess—should also be included, at least for the sake of completeness. The same applies to tuberculosis of the tongue. Why not include syphilis of the tongue, the differential diagnosis of which is often difficult?

But these are minor considerations. A very interesting feature in the chapter on secondary complications is the citation of illustrative cases in the author's experience of these conditions. The book can be highly recommended and the author and publishers congratulated. Ed.

APPARATUS FOR SUSPENSION LARYNGOSCOPY

Designed by **Dr. R. C. LYNCH, NewOrleans, La.**

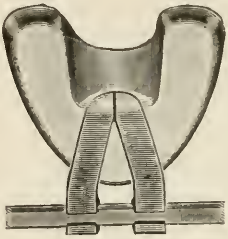
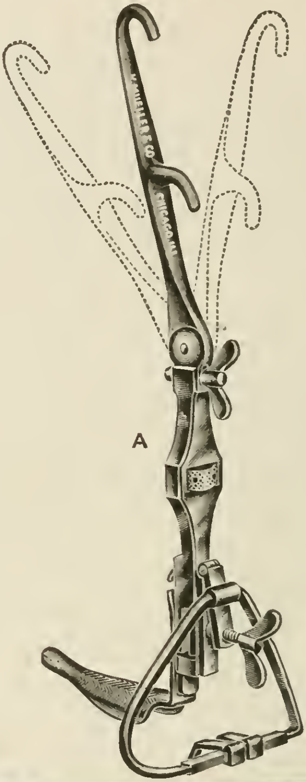


Fig. C.

Fig. A—Suspension hook with tongue spatula, for which five spatulas of different sizes are provided. Latest apparatus supplied with all improvements suggested by Dr. Lynch, such as wing set screw to hold spatulas securely and preventing same from rotating, etc. This apparatus is used in connection with the well-known Killian suspension gallows. See "Laryngoscope," December, 1916, page 1362.



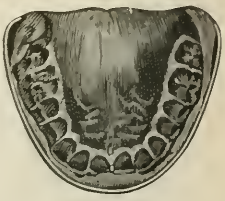
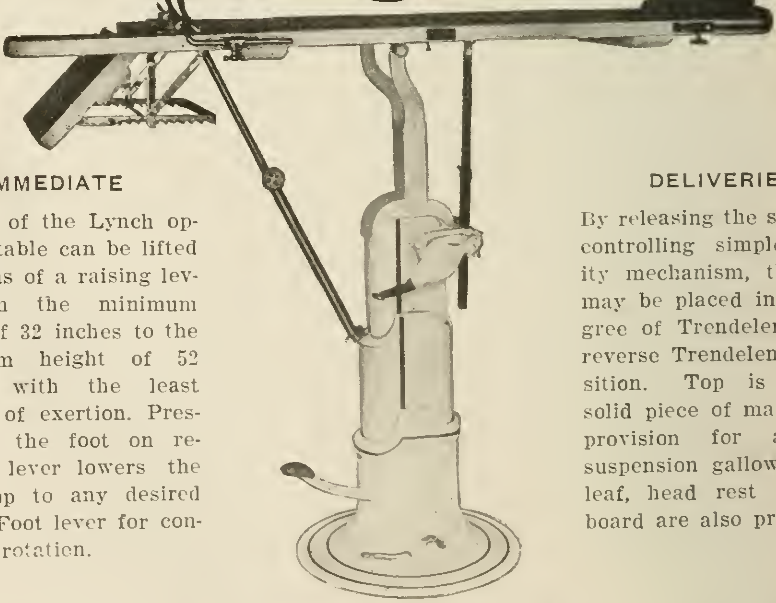


Fig. B.

Fig. B — Modified dental impression spoon, two sizes of which are provided, for adults and children. Illustration shows spoon filled with dental compound. After impression has been made and compound filling entire jaw and hard palate, there is no longer any danger of damaging or loosening teeth, as no metal comes in contact with teeth.

Fig. C. — Showing elongated tooth plates in position making traction on dental spoon.



IMMEDIATE

The top of the Lynch operating table can be lifted by means of a raising lever from the minimum height of 32 inches to the maximum height of 52 inches, with the least amount of exertion. Pressure of the foot on releasing lever lowers the table top to any desired point. Foot lever for control of rotation.

DELIVERIES.

By releasing the set screw controlling simple stability mechanism, the table may be placed in any degree of Trendelenburg or reverse Trendelenburg position. Top is of one solid piece of maple, with provision for attaching suspension gallows. Drop leaf, head rest and foot board are also provided.

Dr. R. C. Lynch's suspension and general nose and throat operating table made by

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

THE NON-SURGICAL TREATMENT OF INFLAMMATION OF THE NASAL ACCESSORY SINUSES.

DR. WALTER A. WELLS, Washington, D. C.

About ten or twelve years ago extensive and radical surgical procedures were greatly in vogue for the cure of diseases of the nasal accessory sinuses, and rhinologists vied with one another in devising new methods for their complete obliteration on the principle that this was essential to recovery. The fact of serious facial disfigurement, which was the not infrequent consequence, was therefore entirely subordinated to this one object.

Unfortunately, however, although entailing many disadvantages to the patient, results as regards a permanent cure of the disease were frequently disappointing. Owing to certain structural and physiological peculiarities not sufficiently taken into account, the most radical operations were not necessarily the most successful ones, and it was found that the patients were often doomed to long, tedious, distressing terms of recovery, with sometimes more than one repetition of an extensive operative procedure.

Moreover, too little regard was had for the nose as an organ having important vital functions and the turbinals and other parts were sometimes ruthlessly sacrificed with serious aftereffects.

None of these considerations, however, were so influential in bringing about a reaction from radical surgery of the sinuses as the fact that operators had the sad experience of witnessing every now and then the development of a meningitis with generally a fatal outcome.

We will observe, therefore, many authors who were formerly strong advocates of radical intervention, expressing at the present time very conservative views with regard to the treatment of the nasal sinuses, and recent literature shows that there is great confidence now in certain simple non-surgical methods—such as the use of suction or negative pressure.

The purpose of this paper will be chiefly to consider the rationale of the cure of sinus inflammation and to discuss the principles involved as well as the results obtained in some of the newer methods of treatment.

In order that we shall be able to establish rational principles for treatment of the disease of any organ, we need to fix our mind especially upon two points, one being the factors of its causation, the other the natural processes of repair. We must seek for the causes that we may remove them, and for the processes of nature that we may imitate them.

As peculiarities of development, of structure and of function are relevant to the subject, it may be pardonable for the purpose of a logical and symmetrical development of my thesis, to briefly review a few elementary details.

The nasal accessory sinuses are regarded by some authors as mere vestigial remains of organs which in the lower animals and in primitive man had important olfactory functions.

Originally they formed a part and parcel of the nasal cavities which communicated with them through wide openings. But as their usefulness as olfactory organs lessened, they became gradually walled off, leaving only small communicating apertures or channels, which we can readily understand must be maintained in order to provide ventilation and drainage of cavities still lined with functionally active mucous membranes. If the vestigial character of the sinuses be accepted, it follows that they must be regarded as organs of inferior vitality, a fact which may explain on the one hand their reputed vulnerability to disease, and on the other their incapacity for complete repair after extensive injury.

The mucous membrane of the sinuses differs from the mucous membrane of the nose in degree rather than in kind. The glandular elements and nerve filaments are less numerous and the blood supply to the submucosa less abundant. Not only, however, is the layer of epithelial cells thinner, but especially to be noted is the fact that the genetic layer of the epithelial surface is less substantial, all facts pointing, it seems to me, quite significantly to a lessened power of regeneration on the part of the submucosa. Therefore, from histological as well as developmental considerations, arguments are to be drawn which speak strongly against extensive operative intervention and in favor of extreme conservatism in dealing with the nasal accessory sinuses.

A few words in regard to their anatomical peculiarities:

The nasal accessory sinuses give us little concern in early childhood and almost none at all during infancy. The maxillary sinus is present in but a very rudimentary form at birth; its permanent shape and normal position are not obtained until after the eruption of the permanent teeth. The frontal sinus is not present at all at birth; it makes its first appearance at about the second year and at about the eighth year assumes the form of a distinct cavity. The ethmoid and sphenoid sinuses are present at birth, but like the others, develop slowly and do not assume their complete form and size until puberty or even later.

The nasal accessory sinuses in the adult are very variable with regard to form, dimension and capacity and the situation of their apertures. In general, however, we find that they have a volumetric capacity equal to twice that of the nasal fossae proper, and, normally, each sinus will have at least one aperture of communication, through which the mucous membrane covering its wall becomes continuous with that lining the nasal passages. As pathological processes tend to spread by continuity throughout any homogeneous structure, it is nothing more than we could expect that inflammation affecting the nasal passages should involve the sinuses. The inference with regard to the indication to give attention to the condition of the nasal passages is sufficiently evident and we may lay aside the question as to whether or not the sinuses can become independently inflamed. Certainly in the great majority of cases the nose is primarily affected.

When the openings of the sinuses are in proximity, infection of one of these sinuses from the other is always imminent. Therefore, the frontal, anterior ethmoidal and the maxillary sinuses, which constitute the anterior group and open near each other in the region of the hiatus semi-lunaris, are frequently observed to be concomitantly diseased. Similarly, we find the posterior ethmoidal cells very often involved in case of suppuration of the sphenoid sinus, or vice versa, because these two constituting the posterior group open near each other in the region of the superior meatus. Capillary attraction and syphonage are probably the active forces in causing a spread of the purulent infection.

In addition to the fact that certain of these sinuses are in such intimate anatomic relation through their cells, walls and ostia, another fact arguing for their mutual pathological dependence is to be found in their common vascular and vaso-motor supply. Causes which act through these media are likely to influence simultaneously, in greater or less degree, the entire nasal accessory system.

The obvious deduction to be drawn from these considerations is, of course, that treatment of any kind, restricted to a single sinus, may prove futile so long as a neighboring sinus continues to suppurate. Radical measures will therefore often have to be much more extensive than originally contemplated.

The maxillary sinus, in addition to those causes common to other sinuses, is in a certain proportion of cases affected by caries of the roots of certain teeth, which are in anatomical relation with its floor—most commonly the second bicuspid and first molar. The dental origin formerly regarded as responsible for about one-half of all antral suppuration seems to have lessened as a factor and according to later statistics can hardly be incriminated for more than one-third of all cases.

Of great interest in connection with the treatment as well as the genesis of sinus inflammation is the size, conformation, and especially the situation of their ostia.

Looking at a sagital section exposing the lateral wall of the nose, we observe that the frontal sinus has its outlet at the most dependent place so that the secretions will fall downward through a narrow channel, opening either in the upper part of the hiatus semi-lunaris, or just anterior to it.

The opening of the maxillary sinus, which may be seen in the lower posterior end of this hiatus, instead of being at the most dependent locality is situated, on the contrary, near the roof, so that with the patient in the upright position no fluid can flow by force of gravity until the cavity is practically full.

The same is true also of the sphenoid, whose opening may be seen in the superior meatus on the upper part of the anterior sinus wall.

Much has been made of these various positions on the ostia relative to the sinus cavities. The deduction generally made with regard to treatment is that while a frontal sinus may be depended upon to get rid of a purulent collection because of the favorable situation of its outlet for drainage, the case is hopeless for the antrum and the sphenoid unless surgical measures are resorted to. To hold such a view means to have far too little confidence in the resources of Nature, who provided other means for the emptying of the sinuses than gravity alone.

Skillern has shown that if finely powdered lamp black is strewn over the mucous lining of the sinus of freshly slaughtered calves, the black particles may be observed to travel the space of 1 cm. per minute toward the ostium, no matter what the situation, and that in a short time it will have completely escaped into the nasal cavity. This is accomplished through the activity of the ciliated epithelium which is without doubt the most potent force in ridding the sinuses of contained secretion. The mucous membrane of all the nasal accessory sinuses is of the ciliated type. The fine hairs or cilia are in rapid and constant motion and always towards the sinus opening.

The waving of one of these cilia has been likened to the lashing of a whip. It is estimated to occur at the rate of about twelve times a second, the forward movement being twice as rapid as the return. Warmth and an alkaline reaction of the secretions favor their activity, whereas cold, too great acidity and irritant chemicals have a retarding effect. We see, therefore, in the action of these cilia a powerful force overcoming the laws of gravity. We see at the same time the necessity of their integrity being maintained and of the importance of securing a proper environment for their activity, from which facts we may not only draw general arguments in favor of conservatism, but also some practical deductions for local treatment.

It shows the advantage of bringing into contact with the membranes no medicaments which have not been warmed, and if in solution they must be alkaline and bland—never strongly irritant. When the secretions become thick, viscid and abundant, ciliated action is embarrassed and their removal is consequently a rational indication.

In the plan of the lymphatic distribution, unlike the case of the blood supply, there is no reason for the common involvement of the sinuses or the extension of disease from one to the other. The lymphatics forming an interlacing network over the walls of the individual cavities seem to radiate in each case toward the ostium, where they communicate with the large vessels of the nasal fossae. They are no doubt a part of a protective mechanism and acting in conjunction with the ciliated cells tend to relieve the cavities of exudate and epithelial debris, which accumulate as a result of inflammation of its lining walls. The direction of the flow being toward the nasal cavities, inflammatory engorgement within the latter will naturally impede this wholesome draining process, produce stais of the lymphatics of the sinus and thus favor bacterial invasion.

In addition to the action of the ciliated cells of the lymphatics certain physical forces, according to Yankauer, may be counted upon to promote the evacuation of the sinuses. These are especially capillary attraction and syphonage.

Through adhesiveness of the secretions of the sinus wall, assisted by ciliated action of the epithelium, an accumulation of fluid in one of the sinuses will never be perfectly level, but have always a high meniscus reaching as a rule to the ostium.

Then capillary attraction and syphonage come into play, the former favored by the conformation of the ostial edges, the latter by the continuity of the secretions within the cavity, with what has escaped into the nasal passages through the natural orifice of communication.

Now apertures of the sinuses are maintained evidently by nature for another function beside that of draining away the secretions. As we have already mentioned there was a period in physical development when the sinuses widely communicated with the nose and were constantly in contact with the inspired air. It is for this reason probably that air is still a necessity for their normal health and vitality.

Just as the tympanic cavity becomes congested and diseased when its normal supply of air is cut off by obstruction of the Eustachian tube, so the nasal sinuses suffer when the ostia become in any way occluded. The air in the enclosed cavity becomes gradually absorbed, and the resulting rarefaction tends to produce a sagging in of the yielding membranous lining attended with marked passive congestion. If in such a case a purulent secretion is already present in the cavity, saprophytic microorganisms multiply and bring about a decomposition of the stagnant secretions. It is quite likely that the severe pains experienced in some cases of sinusitis may be due to the pressure of gases arising from the decomposition of pus.

How many physiological facts seem therefore to point to the positive necessity of keeping these ostia clear, as one of the prime indications of sinus treatment?

The bacteriology of the sinus is a topic of great interest, closely related to the subject in hand, but unfortunately, though much has been written, very little has resulted of practical value.

The normal sinuses, contrary to our former opinions, have been shown by more recent investigations to be nearly, if not completely, sterile. Experiments seem to show that the mucoid secretions, if they do not possess actual bactericidal properties, at least are capable of inhibiting bacterial growth.

A great variety of micro-organisms is found in sinus suppuration and there is none which can be rightly called the specific cause. An inflammation which may have begun with a certain micro-organism predominating will often later on show an entirely different one taking its place, and it is the rule to find mixed cultures in a suppuration that has lasted any length of time. For these reasons, if for no other, vaccine treatment of sinus inflammation in the chronic form must be regarded as somewhat chimerical.

Pyogenic cocci seem more often responsible for sinus suppuration than bacilli. Those most frequently found are the pneumococci, streptococci, staphylococci and diplococci.

While many infectious diseases are complicated with sinusitis, in most instances they must be looked upon as only predisposing causes, preparing the soil, as it were, for local infection.

Exception must be made of four diseases in which apparently the sinus inflammation is directly and primarily due to the specific organism of the disease. These are influenza, croupous-pneumonia, diphtheria and erysipelas. Of these by far the most frequent cause is influenza, whose importance as a cause of sinusitis was first pointed out by Lindenthal and later emphasized by Hajek.

Now, finally, let us see if some deductions can be drawn from what has been said that may aid us in the practical question of the treatment of the nasal sinuses.

Certainly on anatomical, physiological and biological grounds, we find considerations which weigh heavily against the undertaking of surgical procedures, which involve extensive injury to the parts. As J. Gordon Wilson in a recent article[1] says:

"To replace epithelium in a dependent cavity by scar tissue is to replace it with tissue with no physiological action. I cannot conceive of a healthy antrum existing after extensive curretage. The teaching of nature is obvious. The mucous membrane of the sinus is doing important work. We may aid by reducing chronic vascular and lymphatic engorgement; we may assist in the removal of excess secretions; but if we do so at the expense of permanent damage to the ciliated walls we may well go slowly and ask what compensation we offer for the loss."

After years of radical surgery the testimony of experience is now finally coming into line with these theoretical considerations.

No man in the past was a warmer advocate of radical sinus surgery and no one performed these radical operations with more skill than Dr. Lewis Coffin. Yet in the same number of The Laryngoscope in which appeared the article from which the above quotation is taken, we find also a paper by Coffin advocating non-surgical measures and describing a new apparatus which he has devised for medical treatment of the sinuses.

"My experience," he says, "has been that in many cases in which I have done most thorough and radical operations, there have been recurrences of the disease at variable lengths of time."

He makes the observation that a sinus which has been once diseased, though treated to the point of apparently entire recovery, is more likely to become again affected than a previously healthy sinus in the same individual.

A complete consideration of the non-surgical treatment of the nasal accessory sinuses would require us to discuss general as well as local treatment. Of the former we shall have little to say. In acute conditions one would make use of such remedies designed to combat the general infection and to relieve pain. For the more chronic conditions only general tonic and hygienic treatment would be considered.

For the acute attacks salicylates are in great vogue. Aspirin is especially of great value because of its anodyne effect. Diaphoresis repeated several nights successively is very helpful in the early stage. Urotropin is administered upon theoretical grounds since the discovery by Dr. W. M. Barton of its elimination in the sinus secretions.

Local treatment, by far the most important, should be guided by principles underlying Nature's own methods of recovery. It will comprise:

I. Measures applied to the nasal passages.

II. Measures applied directly to the sinus cavities.

1. Measures applied to the nasal cavities will have chiefly as their aim the keeping free of the ostia of communication between nose and sinuses so that ventilation and drainage shall be unimpeded.

For the removal of such masses from the nasal passages, irrigation with warm saline solution has long enjoyed favor with the specialists. It is agreeable as well as effective and it is quite likely that in addition to cleansing the nasal passages, it operates at the same time to produce some aspiration upon the sinus cavities.

Another method which is grateful to the patient and yields splendid results in liquefying the thickened secretions and favoring their removal is the steam inhalation.

Special steam inhalers are not necessary, as one may use the ordinary tea kettle, set upon an alcohol stove. By folding a towel in the shape of a cone or cornucopia, the steam can be more effectually delivered to the nares. The decongestion of the membranes is favored by the employing for vaporization a solution of a small amount of menthol in alcohol to which may be added a few drops of chloroform.

When obstruction is due to acute inflammatory swelling of the membrane about the orifice, it is quite allowable to use powerfully acting stringents, such as cocain and adrenalin, to tide over the inflammatory swelling. However, care should be taken to limit the application to the region of the ostia, which for the anterior group of cells is in the hiatus semilunaris; for the posterior, in the superior meatus. Sometimes the infundibulum is choked by the presence of thick secretions, in which circumstance the frontal sinus probe may do good service.

Many cases of sinusitis have developed the more readily because of the presence of certain local lesions or abnormalities which encroach upon the sinus apertures and with the slightest additional swelling lead to their occlusion.

Therefore, we shall often find it necessary, if we will have permanent results, to cut away some portion of the middle turbinal, to ablate polypoid growths, to remove a septal spur or correct a septal deviation.

2. Direct treatment of the sinusal cavity.

Naturally the first thing that comes to mind under this heading is the removal of the stagnant secretions, which, especially when abundant, thick and viscid, will defy ciliary action and other physical forces destined to effect their removal.

In some cases the sinuses can be irrigated directly through their natural openings in the nose. In the case of the maxillary sinus, this method is quite unsatisfactory, because of the high location of its ostium, wherefore the usual practice is to make a puncture by means of a specially constructed trocar under the anterior portion of the inferior turbinate.

Another means of evacuating the sinus, which has lately been recommended and is now used with considerable success by many rhinologists, is of strong negative pressure within the nasal cavities, which, acting through the ostia, tends to aspirate the secretions from the accessory cavities. Various apparatus have been devised for this purpose, the negative pressure being obtained by electric motor, by pneumatic power, or even by the use of the simple rubber bulb.

A satisfactory and yet at the same time simple instrument is that of Mucks, which is used in the Max Halle clinic in Berlin. The suction bulb is of extra strength and resilience and connects by means of a soft rubber tube with a special glass reservoir having a tip that fits snugly into the anterior nares. If the patient is directed to swallow or utter K. K. K. just as the compressed bulb is released, the palate will adjust itself against the pharynx and convert the nasal fossa together with the nasopharynx into a closed cavity. Negative pressure is therefore exerted upon all the sinuses if only the orifices are unobstructed. In addition to the therapeutic uses, such an apparatus renders often some service to diagnosis, for observation of the nose immediately after its use will give us frequently a clue to the particular sinus or sinuses affected, because of the pus thus brought to view.

The chief drawbacks to the use of the ordinary suction apparatus are, first, that the force necessary to be effective is generally attended with considerable pain, and, second, we cannot exclude the Eustachian tube from its action.

For this reason we will often do better to use attachments applied to the region of the orifice or inserted directly through it into the sinus cavity. The author, therefore, for some time has been devoting to this purpose sinus canulas which he devised several years ago, after numerous measurements and studies upon the human skull, and which then were thought of only for the purpose of irrigation.

A very ingenious apparatus has been designed by Dr. Lewis Coffin,[2] of New York, which, in addition to producing suction or negative pressure in the sinuses, will actually deliver medicated vapor to the sinus interior. This is accomplished by virtue of an arrangement which enables one to shift suddenly from negative to positive pressure and vice versa.

The instrument consists of two bottles, one a vacuum bottle, and the other containing the medicament, attached to the same tube. The connecting tube has a switch key by means of which its lumen may be connected with either bottle. At the proximal end one can attach the cut-off for compressed air, while between the two bottles is another smaller tube for attachment of the rubber tubing connected with the exhaust pump.

In order to operate the apparatus it is necessary to have a pump such as that of Sorensen's which will give at the same time both positive and negative pressure, and it is important, moreover, in addition to the regular compression gauge to have interposed in the tubing connected with the exhaust end a vacuumeter which will enable one to measure and regulate the force of suction.

When the nozzle of the apparatus is pressed lightly into one nostril, the other being closed, and the patient directed to say Kak, Kak, Kak, one can by turning the switch-key one way produce a very effective partial vacuum in the nasal fossa and throughout the nasal sinuses wherever the communicating ostia are open.

Then suddenly turning the switch-key, one instantly gets positive pressure causing a volume of medicated vapor to enter the nose, and, according to a well-known physical law, to rush into and fill up the partially vacuumized sinuses.

The author first became acquainted with this apparatus through a personal demonstration by Dr. Coffin about two years ago, shortly after it had been invented, and impressed with its apparent usefulness, began at once to employ it in private practice and has continued to do so daily ever since. He cannot but feel that it is a very valuable addition to the armentarium, since under its use he has gotten some brilliant results, not only in acute and recent cases, but in some old chronic forms of sinusitis which under ordinary conditions would seem to have demanded surgical procedure.

With regard to medication, Coffin has used chiefly carbolic acid and iodin preparations (iodex, iodin petrogen, etc.), and an oil loaded with Bulgarian bacilli.

The author has used for the most part two formulæ: in the recent cases a preparation containing salol, 1 per cent, camphor-menthol, 2 per cent, in benzoinal, and in the older cases a preparation of camphorated phenol, 2 per cent, in a 10 per cent preparation of iodin.

We trust the advocacy of certain non-surgical methods will not be construed as committing the writer unreservedly to their universal application.

Every intelligent surgeon, of course, recognizes that there are cases beyond the pale of conservative measures and for which surgical treatment is definitely indicated. When there is present a polypoid degeneration of the interior lining or a phlegmonous cellutis of the overlying tissues, we may infer that there exists a necrosis of the osseous wall of the cavity which would probably never yield to anything short of thorough surgical measures.

It has been said that we cannot be sure in any case that such a condition does not exist.

But this must be construed as an argument for the use of conservative measures rather than the contrary, because if we do not know that the sinuses are so slightly affected that conservative measures will prove successful, neither can we be sure that the pathological processes are so far advanced that operation is unavoidable. Certainly it is better to employ conservative measures in a case which later must be operated upon than to operate upon a case which could have gotten well without it.

We are convinced that the latter is to-day of far too frequent occurrence and that if the measures which we here advocate should be more often given a faithful trial the number of operations found necessary would be very materially lessened.

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THE PLICA TRIANGULARIS AND ITS MORPHOLOGIC VARIATIONS. A CAUSATIVE FACTOR IN THE PRODUC- OF FOCI OF INFECTION AND IRRITATION.

Dr. Frank G. Murphy, Mason City, Iowa.

That the plica of the fauces is deserving of more attention from laryngologists than the subject has recently received is the thought that inspired the following brief commentary in relation to that important membrane.

Embryologicaly and pathologically the plica triangularis has its analogy in the prepuce. Both develop about the beginning of the third month of foetal life and at birth they should have sufficiently receded to cause no interference with the function of adjoining organs.

The plica triangularis is attached to the superior border of the posterior pillar, and to the posterior edge of the anterior pillar and is inserted into the lateral aspect of the tongue (Fig. 1). With the forward growth of the tongue before and some months after birth the plica may be reduced so that it has apparently disappeared (Fig. 2). The writer thinks that the size of the plica is governed to some extent by heredity. The plica triangularis varies in size from an inconspicuous border along the anterior pillar to a size covering the greater part of the tonsillar fossa as in early foetal life.

Normally the tonsillar fossa is not entirely filled by the tonsil and there is perfect drainage in the anterior, superior and posterior spaces, the plica having sufficiently receded so that it covers no part of the tonsil (Fig. 3). Many have for a number of years observed that where the plica has apparently entirely receded, the tonsil rarely if ever causes trouble, hence we designate it the normal tonsil.

Let us now consider why it is thus so inoffensive and a joy to its possessor. The crypts in this tonsil are drained at frequent intervals because of the constriction of the superior constrictor and the palatal muscles at the base of the tonsil during the acts of deglutition. The normal tonsil is rarely inflamed except when it becomes so in common with other membranes of the throat. Systemic infections are undoubtedly rare and quinsy probably never occurs in this kind of tonsil for it is almost certain that infection of the lympth and blood streams and peritonsillitis are infections through and of the mucous glands, of the capsular and pericapsular tissues, whose ducts do not open into the tonsil but around it.

In spite of the statements in textbooks to the contrary, it has been shown by Labbe, Serugue, Von Levenstein, Frankel, Maclachlan* and others that the mucous ducts open at the periphery of the tonsil. This being true the condition of the plica becomes of the greatest importance to every laryngologist when the question of tonsillar infection is under consideration. In the normal tonsil where the plica has apparently entirely disappeared, there are no crypts in the tonsillar fossa where detritis may collect to become infected and where bacteria may find entrance through the ducts to the mucous glands. It is unmistakable that the drainage of the peritonsillar spaces is of greater importance than that of the tonsillar crypts.

However, it does not matter whether we are considering the drainage of the sinuses in the tonsillar fossa or the crypts in the tonsil, we have the plica to deal with, because it is the plica that determines the normality or the pathogenicity of the tonsillar region. The only exception there might be to this statement, in my opinion, is in the large pedunculated tonsil and I am not sure that an exception should be made here for I have found detritis in the anterior fossa of large pedunculated tonsils which greatly reduced in size when the abnormality of the plica was removed.

When the plica is sufficiently in evidence to interfere with the normal drainage of the peritonsillar spaces it is of ample size to prevent normal drainage of the crypts.

Keeping in mind that the persistent plica triangularis is attached to the entire posterior border of the anterior pillar and that it is inserted into the lateral aspect of the tongue, it is obvious that when the tongue moves backward in deglutition the plica is carried with it and the anterior pillar is pulled to the inner side of the tonsil instead of allowing it to slide to the outer side as it does when the plica has normally receded. This prevents the normal draining of the crypts of the tonsil, and also forms retention cysts containing pathogenic bacteria in the anterior and supratonsillar fossa which may readily infect the mucous glands.

There is apparently no relation between the growth of the tonsil and the size of the plica. A large tonsil may have a large plica (Fig. 4) or a plica scarcely visible (Fig. 3). A small tonsil may be accompanied by a plica undiminished and covering the greater part of the tonsillar fossa (Fig. 1). The size of the plica is as variable as that of the tonsil.

If by operating on the plica the foci of infection through the mucous glands have been disposed of and the tonsillar crypts left to drain normally, which enables the tonsil to dispose of the pathological condition that has been forced upon it, the object of our endeavor has been attained. The rules of surgery that apply in operating on other organs of the body should be applied in disposing of the pathological conditions found in the fauces.

That the pathological conditions formed in the faucial regions are due to the deformed plica in the majority of cases is apparent, and the writer believes that consideration of the embryology, pathology and clinical history gives credence to the proposition. The established anatomical and pathological facts impel the conviction that the removal of this deformed membrane is the scientific procedure in disposing of most foci of infection in the faucial region, and its feasibility commands our consideration.

That the last word has not been said on the tonsil problem we all believe, though a more thorough study of the plica gives promise of more light on this vital subject. The disposition of foci of infection, by removal of the essential part of the plica, possesses the merit of safety, is theoretically correct when properly performed, is clinically efficient and bears promise of relief for many members of our profession of the criticism of removing an organ whose function is unknown.

The writer wishes to suggest that the unreduced plica may be a focus of irritation as well as forming a diverticulum harboring a focus of infection. When the plica covers a large portion of an ordinary sized tonsil the pressure against this membrane is very considerable for the plica resists the efforts of the constrictor muscle in pressing the tonsil inward between the palatal arches in the act of deglutition.

After the plica has been severed patients often maintain that they can swallow more easily than before, that they do not experience the drawing senastion in their throats that they formerly did.

When the plica triangularis has been partly removed, many patients are keenly sensible of reattachments that take place and the writer thinks that this is suggestive of a former irritation produced by that membrane of which the patient was not cognizant.

Reasoning a priori, may not many of our brilliant recoveries following tonsillectomy be the result of partly destroyed plica and therefore of removed foci of irritation? It may happen that the unreduced plica triangularis is at times as much a focus of irritation as is a redundant prepuce.

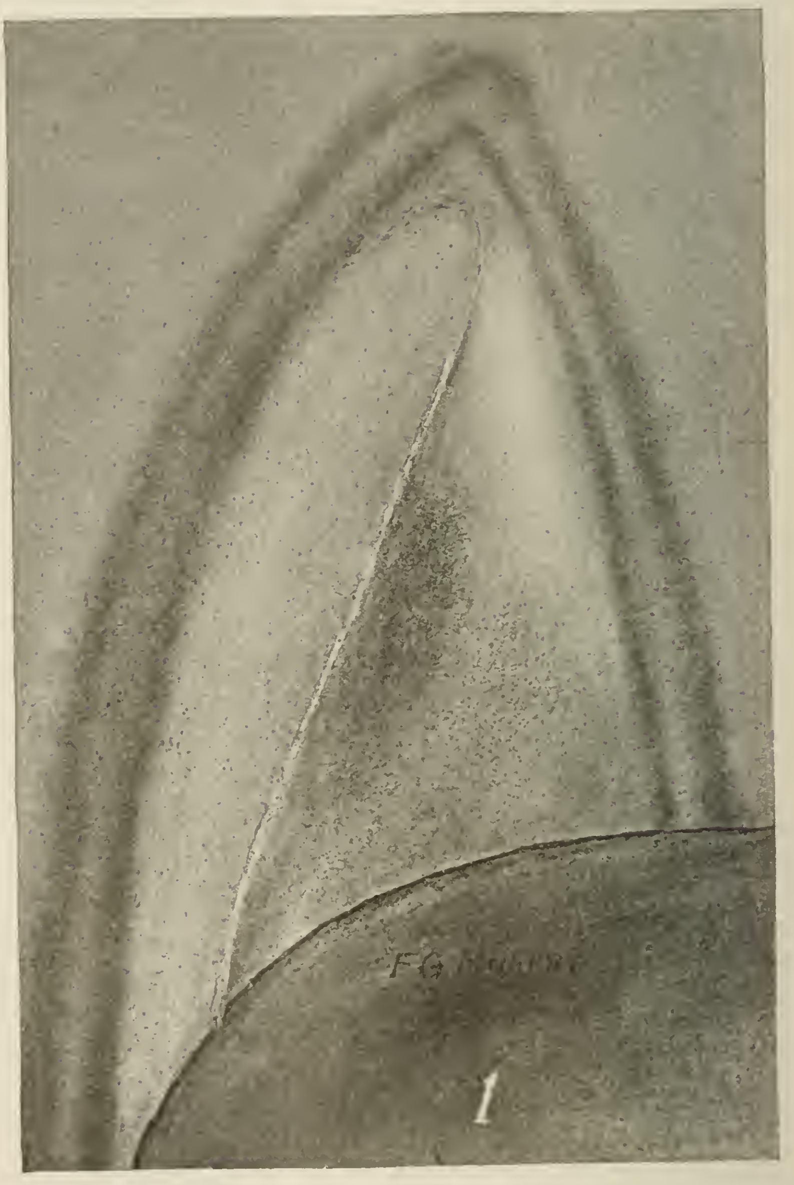

Fig. 1. Showing unreduced plica triangularis and undeveloped tonsil. Upper portion of plica is unattached to wall of fauces producing a diverticulum and culture bed for bacteria. It is usually necessary to use a blunt-pointed bent probe to make a diagnosis of this condition.

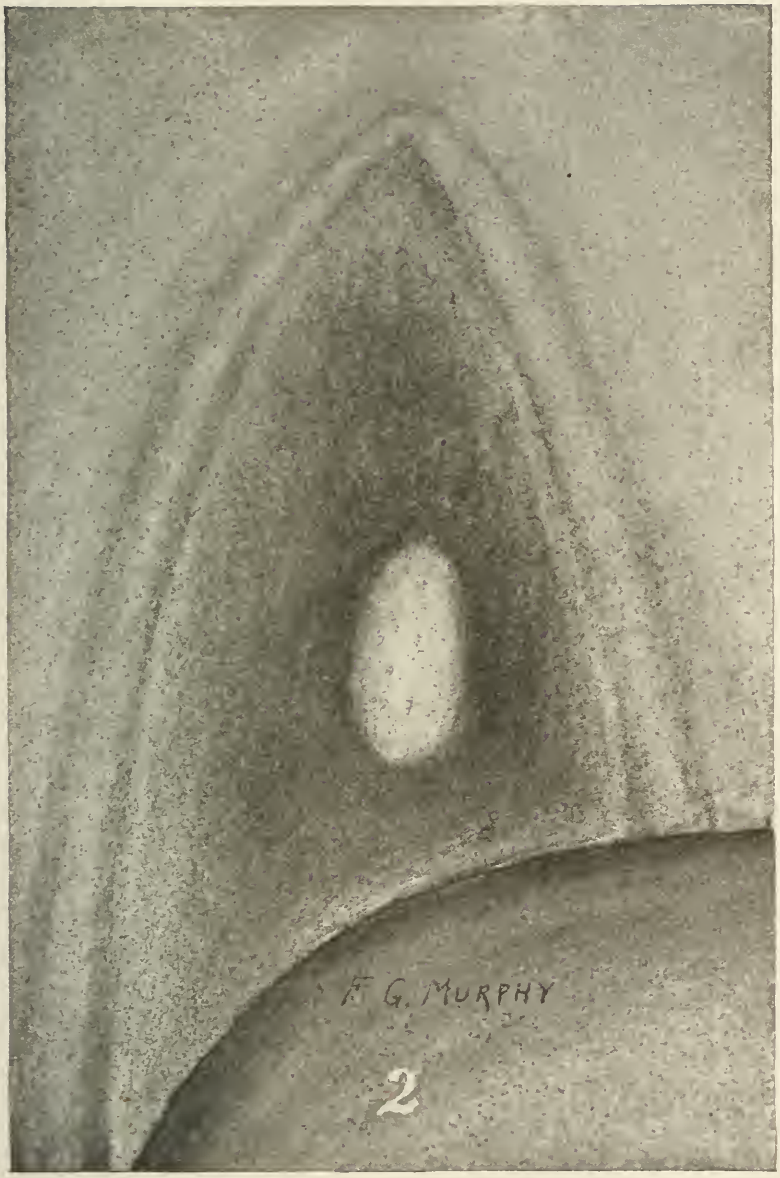

Fig. 2. Showing plica triangularis apparently entirely reduced. Tonsil much atrophied or undeveloped and undoubtedly considered by most laryngologists a normal tonsil. The plica is never absent though it may be reduced to an inconspicuous border along the anterior pillar.

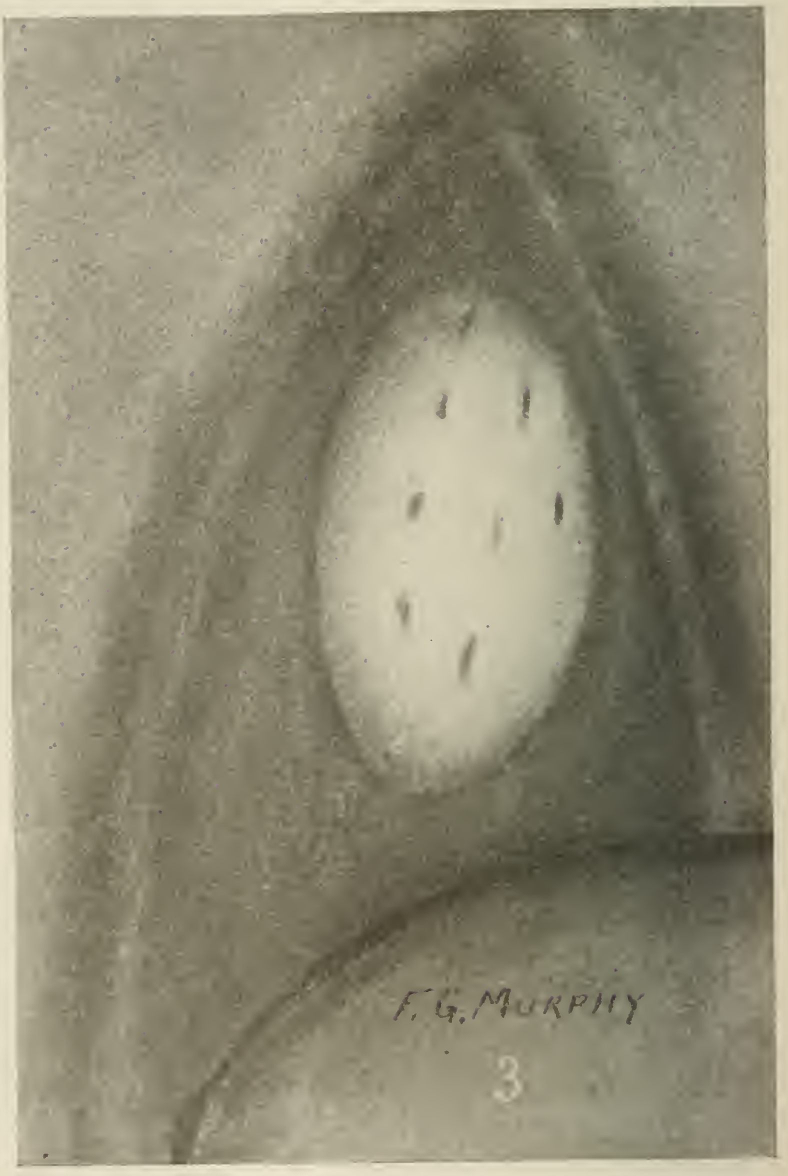

Fig. 3. Fairly large normal tonsil. Plica triangularis not apparent. There are no faucial crypts to serve as culture receptacles for bacteria, eliminating the probability of peritonsillar and systemic infection through the mucous glands in the peritonsillar regions.

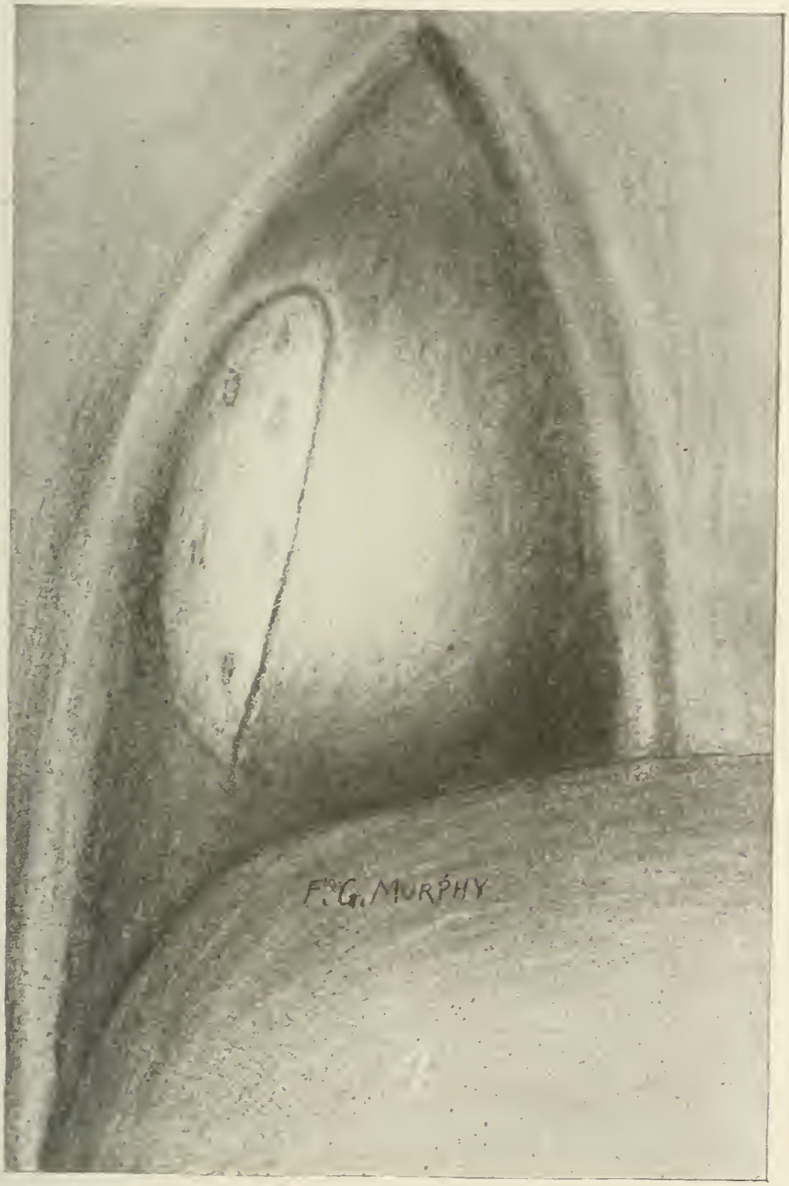

Fig. 4. Persistent plica triangularis enveloping large tonsil as in a sling. Detritis collecting between the plica and the upper and anterior parts of the tonsil, harboring pathogenic bacteria, and predisposing the patient to quinsy and systemic infection.

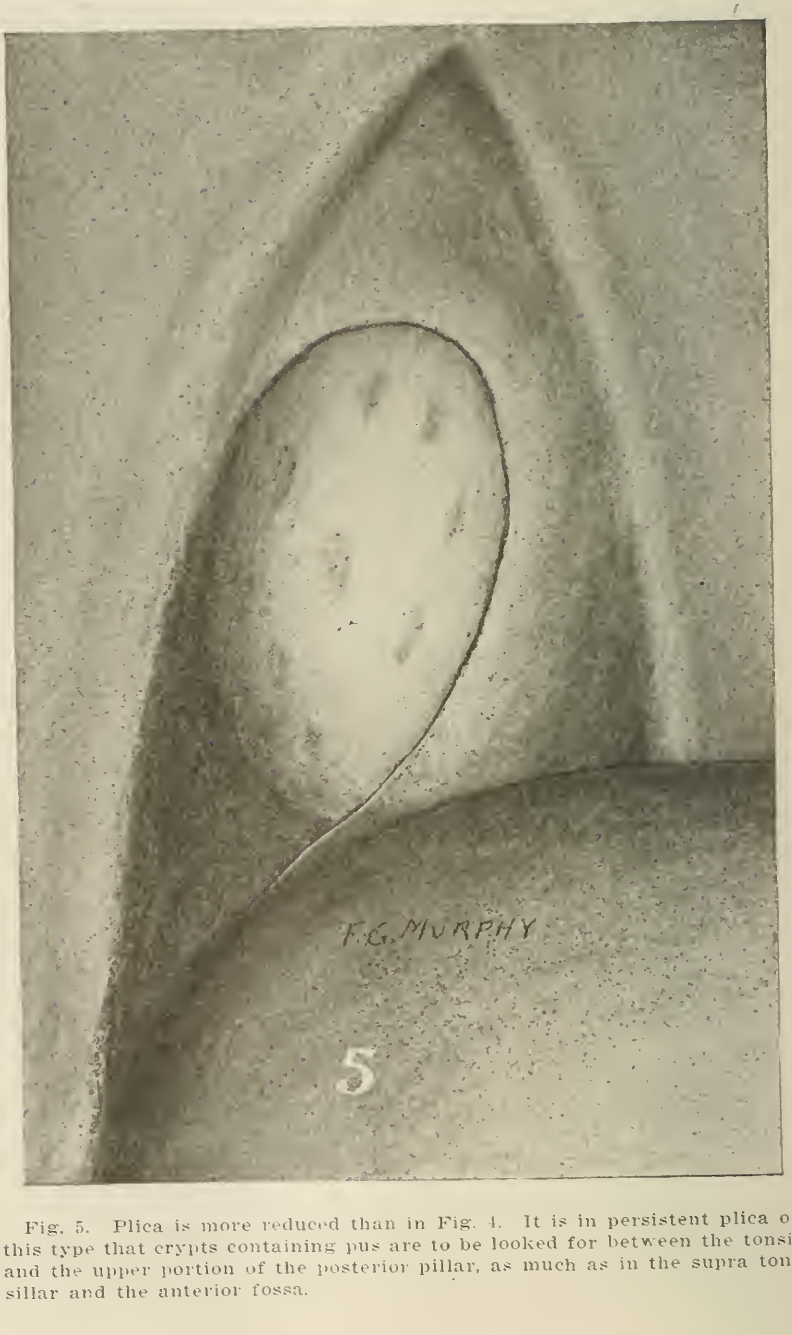

Fig. 5. Plica is more reduced than in Fig. 4. It is in persistent plica of this type that crypts containing pus are to be looked for between the tonsil and the upper portion of the posterior pillar, as much as in the supra tonsillar and the anterior fossa.

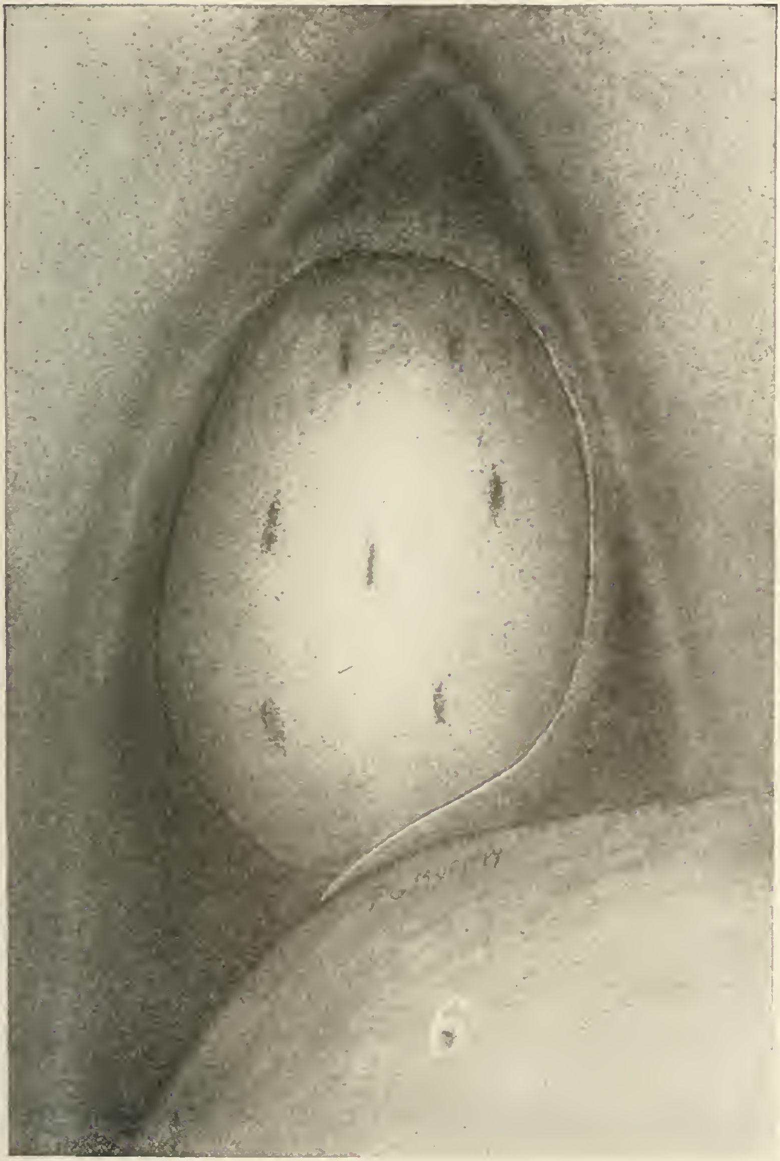

Fig. 6. Showing only rim of plica triangularis around the tonsil in its superior, anterior, and inferior portions. Plica is attached to lateral aspect of the tongue, and draws the anterior pillar inwards in deglutition, preventing perfect drainage of the tonsillar crypts.

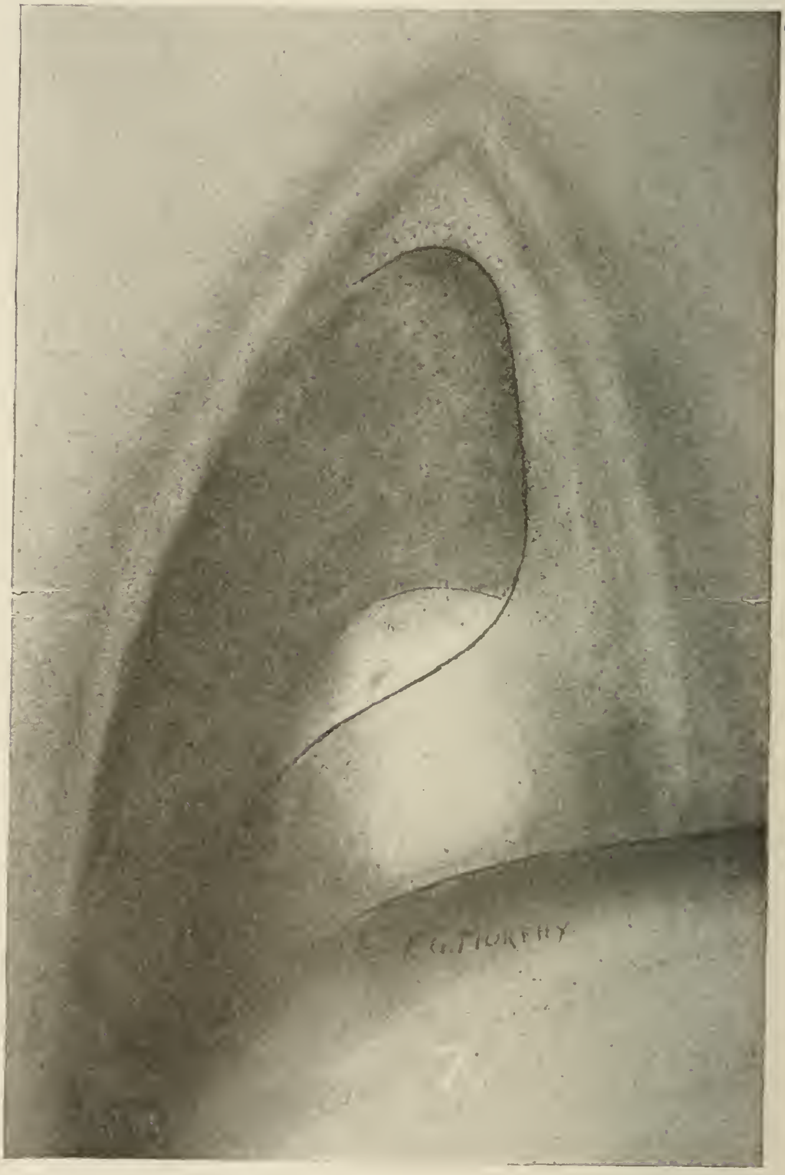

Fig. 7. Showing developed lower lobe of the tonsil. Foul smelling, cheesy substance is invariably found in the sinus between the tonsil and the anterior pillar, and enclosed by the plica. Superior lobe or tonsil not in evidence. There is perfect drainage in the supratonsillar fossa.

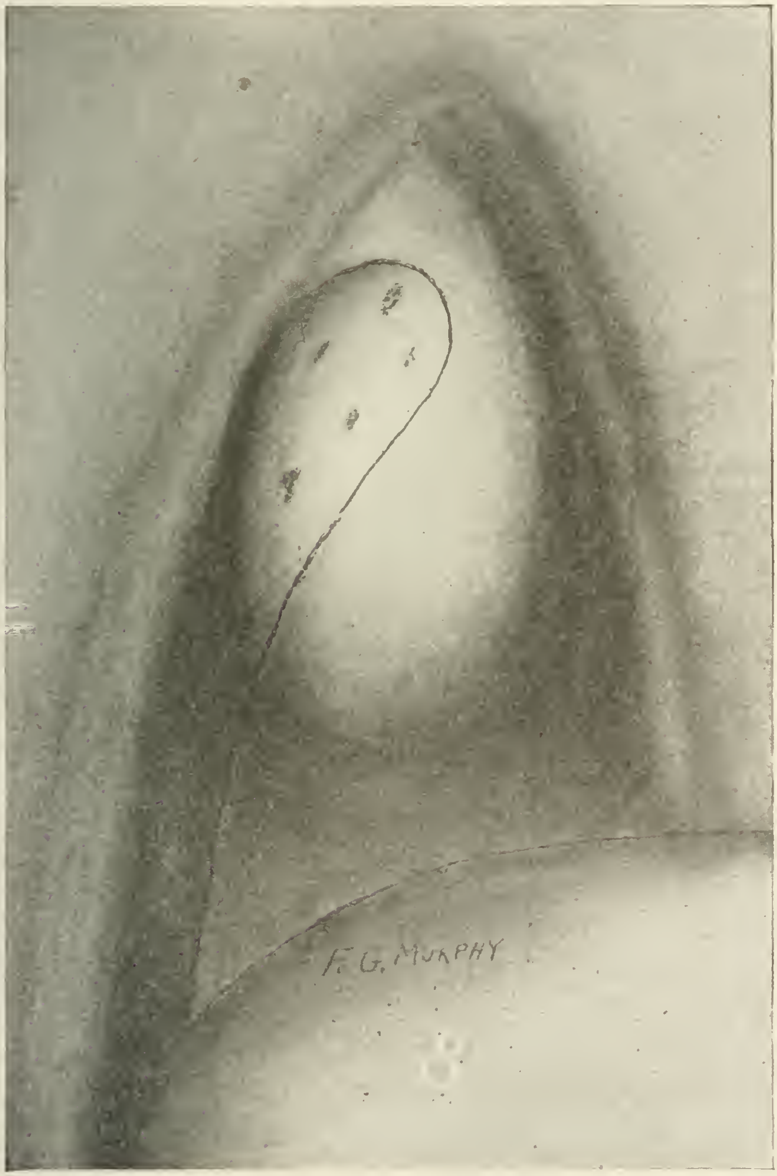

Fig. 8. Showing developed upper lobe of tonsil partly enclosed by the plica, which becomes attached to the wall of the fauces between the tonsil and the base of the tongue. The plica is always unattached to the faucial wall above the tonsil though its adherence below is constant.

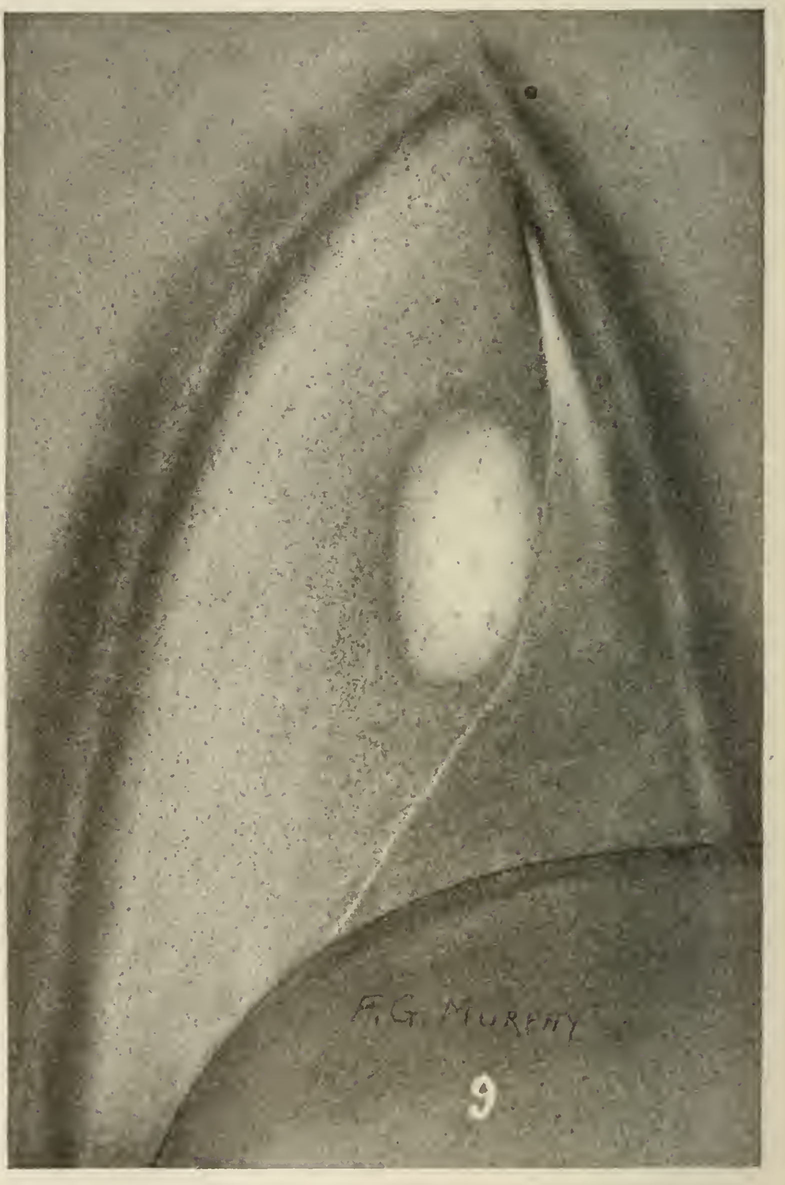

Fig. 9. Atrophied tonsil with plica so little in evidence that the deep crypt behind the anterior pillar can be discovered only by the use of the round-pointed bent probe. This condition is more frequently found in older people whose tonsils are in a condition of advanced atrophy.

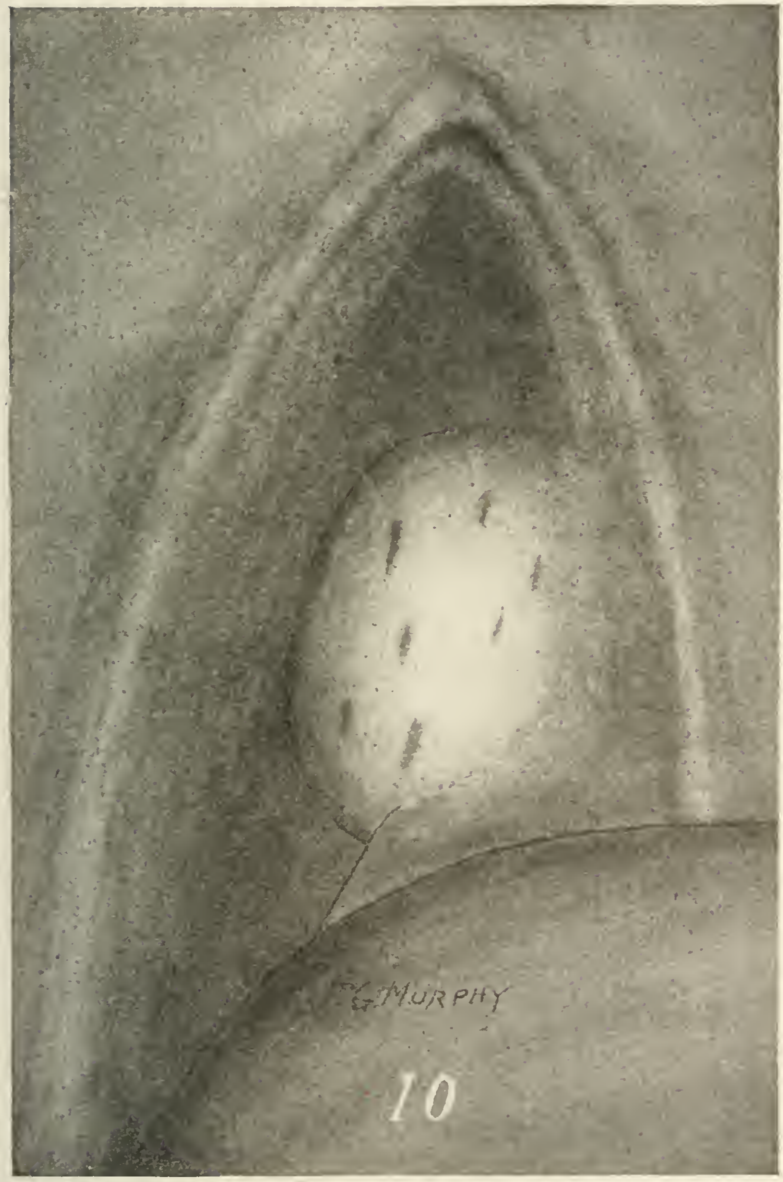

Fig. 10. Showing tissues of the plica blending into the tonsillar epithelium, causing line of demarcation to become obscure. In the writer's experience this kind of plica predisposes to chronic peritonsillar abscess, though the tonsil may be nearly normal in appearance.

RELATION OF THE GLANDS OF INTERNAL SECRETION TO OTO-LARYNGOLOGY.*

DR. JOSEPH C. BECK, Chicago.

Our aim to-day shall be to bring before you this complex subject in the form of a plea for the recognition of the importance of these glands in oto-laryngologic practice, in the broadest sense. Not only do we ask you to recognize them as important but we wish to present our studies and investigations in such a manner as to enable you to co-operate in order that we may come to some definite conclusions.

The subject is a very large one and consequently in order to cover it we will only bring out the vital and practical points, leaving the details for some future time. We will attempt, however, to cover the entire subject in a general way and expect, from time to time, to take up the affections of individual glands as related to the ear, nose and throat. To-day we only wish to discuss the hypophysis in detail.

I will first describe our own studies on ductless glands, and subsequently Dr. Pollock will take up a consideration of the literature of the subject. The principal conditions that we shall consider are:

1. Hyperadrenalism and hypoadrenalism.
2. Hyperthyroidism and hypothyroidism.
3. Hyperthymism and hypothymism.
4. Hyperpituitism and hypopituitism.

From this outline it will be noted that the four great glands which we are considering as causing disturbances are the thyroid, thymus, hypophysis and adrenals.

The various other structures that are considered as ductless or endocrinal glands or partly so, such as the pineal, parathyroids, ovaries, testicles, liver, etc., we will not take into consideration at this time.

The various oto-laryngological subjects that we will consider are: (1) Atrophic rhinitis. (2) Hyperplastic or non-suppurative sinusitis in which we have (a) hay fever, (b) hyperesthetic rhinitis with or without hydrorrhea, (c) asthma. (3) Septal deflection and excrescences. (4) Oto-sclerosis. (5) Exophthalmic goitre. (6) Myxedema. (7) Status thymicus and lymphaticus. (8) Epilepsy. (9) Acromegaly. (10) Froehlich's syndrome.

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*Read before the American Academy of Ophthalmology and Oto-Laryngology, at Memphis, Tenn., Dec. 11-12, 1916.

As stated before, in the study of these glands, it is not our purpose to take up any other part of these diseases except that which concerns the oto-laryngologist, and then only the essential points. That these glands of internal secretion play an important part in the human economy there can be no doubt. When, for instance, the thyroid is secreting excessively, there is development of rapid pulse, marked exhaustion, etc., and should one administer a dose of thyroid extract, one would see how very much these symptoms are aggravated. A dose of pituitrin will unquestionably cause marked contraction of non-striped muscle fibres particularly of the uterus. Again, a deficiency of thyroid secretion will be very quickly shown by symptoms of myxedema and when thyroid extract is given, these symptoms quickly disappear. Many examples could be described of the specific action of these glands, but that is scarcely within the province of my part of the program and will be taken up by Dr. Pollock. There is still a very important portion of the work unfinished and that is the determination, either by chemical or other tests of the blood or other secretions, as to whether an individual has an excess or deficiency of any one or more of the glandular secretions.

The pathological changes supposedly due to alterations in the internal secretions are also of conclusive evidence of the relationship, and that has been the basis of most of our work. I have special reference to the bony changes found in the nasal and ear structures. At the conclusion of Dr. Pollock's paper I will demonstrate some of the conditions.

Two glands are known to have a specific influence on bone growth and they are the hypophysis and adrenals. The thymus, too, has some influence on the nutrition of bone. From our histo-pathological findings of the turbinates, septum and internal ear, compared with the histo-pathology of the bones of the rest of the skeleton in conditions in which the glands of internal secretions are disturbed, as, for instance, in osteomalacia, acromegaly, etc., we have found that there is an analogy that is worth while following up. In other words, the pathological changes in the bony capsule of the labyrinth in otosclerosis are analogous to the bony changes in osteomalacia and to a certain degree in the turbinated structure in the diseases mentioned above, as well as in the bony changes of the septum at the point of deflection and ridge formation.

What does that all mean? Simply that we believe that in conditions such as atrophic rhinitis, hyperplastic ethmoiditis whether we have hay-fever, hyperesthetic rhinitis or asthma; in otosclerosis and septum deviations the same etiological factor plays the part and the treatment should be the same.

I. Atrophic rhinitis. Several years ago I observed that this condition occurred mostly in girls or women and that many of these patients had small thyroids. I began empirically to feed them on thyroid extract and they showed some improvement. I then referred every case of atrophic rhinitis (genuine ozena) to Dr. Pollock to follow out this line of treatment and this he has done, employing the thyroid, thymus, adrenal and hypophysis glands in a systematic manner, that is to say, not all at one time in any sort of a dose, but in particular combinations and dosages. This he reported in 1912. We have not ignored other methods of treatment, particularly the bacterial or vaccine, but have found no specific benefit from that treatment alone. However, in combination with organo-therapy there appears to be better results obtained. One treatment that is beneficial in atrophic rhinitis which I may be pardoned for mentioning here is the surgical. I have recently employed a method to supplant the intra-septal injections of paraffin, which I believe to be original, although Dr. Iglauer reported some transplanting experiments a few years ago. We simply do a septal resection of cartilage and bone through a small slit. Then through an ear speculum introduced into this slit we pack small pieces of fascia (no fat).

Our theory as to the etiology of atrophic rhinitis, which applies also to the other conditions about to be described, is about as follows: Primarily there is a chronic focus of infection. This may be intestinal, tonsillar, dental, or in the sinuses, etc. This focal infection produces marked changes in some of the glands of internal secretion, thus disturbing their entire harmonic action. In consequence of this disturbance there result certain pathological changes particularly in the bony frame work, in this case, in the turbinates. It is mostly a rarefying process. The mucous membrane covering these bones undergoes a secondary degenerative change and in atrophic rhinitis a metaplasia of the epithelium. Finally, there develops a low grade infection of a great variety of organisms among which there is the so-called specific foetid bacillus of ozena.

We therefore give these patients either by mouth or hypodermatically, glandular extracts alone or in combination, for a period of from one to six months and after a lapse of time, say from one to three months, we repeat this treatment. It is noteworthy that at times there does not appear to be any effect from the treatment while at another time the same treatment is followed by striking results. Why that is so we have not been able to ascertain nor can we even suggest a theory, although there are explanations to be found in the literature.

II. Hyperplastic ethmoiditis or non-suppurative sinusitis. In the majority of cases we have found the same rarefying process of the middle turbinate and ethmoidal cells as in atrophic rhinitis. The mucous membrane covering this bone, however, becomes degenerated in the form of a pseudomyxoma, otherwise known as polypoid. The usual accompaniment is excessive irritability of the nasal mucous membrane, which produces the marked sneezing usually followed by an excessive watery discharge. The pathological change is not so marked in hay-fever as far as rarefication is concerned, nor do we find any great changes in the mucosa unless the symptom of asthma is present. The large number of cases of so-called bronchial asthma that the oto-laryngologist encounters, have invariably the clinical picture of a non-suppurative sinusitis. At first no polypi are visible but later almost always. Histo-pathologically there is present the rarefying change of a hyperplastic ethmoiditis. We believe, therefore, that these three conditions are due to the same cause, namely, a hyposecretion or disharmony of one or more of the glands mentioned above and that the underlying cause is a focal infection. We believe that the infection is most frequently from the intestinal tract; that these patients are sensitized particularly to protein or albumin and have attacks such as sneezing and asthma which is a true anaphylaxis. That there is a deficiency in the glandular secretion may be explained by the fact that when we administer a large dose of adrenalin to a patient in the attack of asthma, he is frequently relieved. It has been claimed that this is due to the action of the drug, by raising the blood pressure or as an antispasmodic; but we believe it is a temporary satisfying of the hyposecretion. The treatment, of course, is to remove the original cause, namely, the focus of infection, and to administer glandular extract to temporarily satisfy the system. The local nasal pathology is taken care of; a middle turbinectomy or ethmoid exenteration are as a rule, sufficient. However, no permanent cure of any of the conditions mentioned can be obtained by any of these operative procedures alone, so far as we have observed.

III. Oto-sclerosis. About five years ago while studying the histo-pathology of this disease on some specimens presented to me by Drs. Gray and Neumann, I noted the similarity of the spongyfing process in oto-sclerosis to that of osteomalacia, arthritis deformans and the bones in early months of pregnancy. I also found that experiments were being carried out on the treatment of these general processes by the administration of adrenalin, thymus and pituitary extracts and good results reported. We began the same therapeutic experiments on a few cases of oto-sclerosis and made our report before the Southern Section of the American Otological, Laryngological and Rhinological Society at New Orleans in 1913. Since that time we have been employing these glandular extracts routinely in every case of suspicious or clearly diagnosed oto-sclerosis. Adrenalin has been the principal substance employed, although in a good many cases we combined the extracts of the adrenal, thymus and pituitary. Recently Dr. Smith of Delta, Colorado, told me that he has been using the pituitrin exclusively with good results and believes that it acts as an aid to the harmonic action of the other glands. Although we have the records of several cases in which there is no doubt that there has been improvement by this treatment, we have never claimed that we have cured a case of oto-sclerosis nor even improved the hearing. Furthermore, we have the statements from otologists who have treated some cases by the use of adrenalin, of improvement in the hearing as well as in the tinnitus aurium. What we do claim is this: that cases of oto-sclerosis treated by injections of adrenalin 1-1000 solution from 1 to 15 minims in gradually increasing doses have shown a tendency not to progress. The injections should be controlled by measurement of the blood pressure and should be given every second or third day for a period of six weeks to three months, then interrupted for the same period of time, then resumed for the same period and then stopped. We have further removed foci of chronic infection, particularly from the tonsils and teeth, in such cases and obtained more permanent relief. Most of these cases were not treated by us by any other methods, such as inflation or medicines. In some of these cases we administered the pituitary and thymus gland extracts as well. As will be shown later in Dr. Pollock's paper, long-continued use of adrenal extract is said to produce an arterio-sclerosis, but in all these years we have seen no evidence of this affection clinically from such employment nor have we had any other untoward results.

About two years ago before the Middle Section of the American Laryngological, Rhinological and Otological Society I reported on the value of roentgenography in oto-sclerosis and stated that I was able to demonstrate the spongification process. I called attention to the use of this method to control the progress of the disease by repeating the roentgenography, thus determining if there has been any further involvement.

IV. Septum deflections with excrescence. We make no positive claim that the etiologic factor in septum deformity is disturbance of the glands of internal secretion, but we do positively state that in the examination microscopically of deviated septa and excrescences we find the same rarefying process as in the turbinated bones, the internal ear, osteomalacia, etc. Since there is no definite etiologic factor for deviation and excrescences of the septum, may we not be permitted to theorize on the basis of true pathological conditions in their analogy that disturbed internal secretions may have something to do with it? A practical point is, may it not be prevented from developing?

V. Exophthalmic goitre or thyrotoxic conditions. This affection is treated by the neurologist, internist, general surgeon, ophthalmologist and oto-laryngologist because the symptomatology as well as the treatment is so varied and manifold. So far as the oto-laryngologist is concerned, it is the recognition of the earliest symptoms that he is concerned with, as well as carrying out the real beneficial treatment. Many of these patients come to us with headaches and ear noises and in many instances they have been improperly treated by operation or treatment within the nasal cavity or by inflations of the middle ear, none of which have proved of any permanent value. If one does recognize the other cardinal symptoms of hyperthyroidism as rapid pulse, fatigue with prostration on slight exertion, tremor, perspiration, diarrhea, and the fine soft skin, especially of the hands, whether there be exophthalmos or thyroid enlargement or not, one will be able to make the correct diagnosis. One or two doses of thyroid extract will markedly increase all the above symptoms and the administration of the serum or extracts of thyroidectomized animals will relieve them at least temporarily. The surgical treatment has and still does hold sway because the results are so striking from the ligation of the thyroid vessels with subsequent resection of part of the gland in the bad cases, and the immediate removal of part of the gland in the not far advanced cases. Our results from these procedures have shown us that they are not permanent and our observation of many operated cases elsewhere show the same. We have, however, some of these recurrent cases as well as many others not operated on, that were subjected to a tonsillectomy, that do show no tendency to recurrence. There is one case in our experience worth while mentioning very briefly, that shows the value of tonsillectomy in this affection. I was called by a competent general surgeon and an equally competent internist to see a case of far-advanced exophthalmos, to examine the tonsils with the idea that these may be infected, and if so, if they could be washed or treated so as to improve the general condition of the patient in order that a ligation of the thyroid vessel might be done. The resident physician gave me a wrong message, stating that I should come to the hospital and remove the tonsils from that patient. This I did, without any hesitancy, since I knew these gentlemen to be judges as to the indications in the removal of tonsils, and consequently never even examined the throat before operation. There was nothing unusual about the operation except that she was a very nervous patient. When later in the day the surgeon and internist found out what had been done, they became very much alarmed, and, of course, expected an exitus, but to-day, four years since the operation, the patient is permanently cured of the hyperthyroidism.

VI. Myxedema. I have had two cases of myxedema in which there were marked laryngeal symptoms in that the voice became very much changed. In one of them, that of a lady who previously had a pleasant high voice, the voice changed to a deep, manly type. There was nothing to be found except a suggestion of the cords being hypertrophied, but not inflamed. The other case was one of a man who suffered from adeno-carcinoma of the larynx and was subjected to thirty deep penetration x-ray treatments over the region of the thyroid, following the removal of the growth under suspension laryngoscopy. The symptoms of myxedema disappeared following the administration of thyroid extract, twenty grains daily for six weeks. Another point of interest is the non-recurrence of the carcinoma (three years). The use of thyroid cured this condition permanently.

VII. Status thymicus or status lymphaticus. As stated before, we believe that the lack of thymus secretion has something to do with the rarefying changes in the bones and that we employ it in the treatment of such conditions. As to true diseases of this gland we are most concerned in the lymphatic dyscrasias and the occasional pressure symptoms on the trachea. In all cases of infants where we find marked glandular enlargement particularly with enlargement of the tonsils and adenoids we are suspicious that there is trouble with the thymus. Consequently, we have in the past eight years not operated on any of these cases radically. We usually refrain from operating on them at all, and if a tonsillectomy and a partial adenectomy is performed, it is done without any anesthetic. We have further adopted a rule not to operate on infants or children under three years of age unless extreme indications are present. We have been much criticised by the profession, espcially some of the pediatricians, for this view, but we have the records of enough cases to show that it is not good practice. There are four fatalities among them, none of which we operated, but saw in consultation; three died within five weeks from symptoms resembling marasmus, and one very much like a cretin. We have seen a fair number of cases of infants that had tonsils and adenoids removed radically, following which there was a marked fattening of these babies, to the delight of the doctors and parents, but subsequently it was found that these children were somewhat backward in mentality and contracted colds and other diseases of infancy much more easily. On inquiry, we have seldom had similar experience expressed by other physicians.

Epilepsy. This subject is of interest to the laryngologist because cases have a great many times been reported in the literature of certain growths within the nose and throat such as sharp spurs on septum, adenoids and tonsils, which when removed, cured the case of epilepsy. We have had a number of such cases but not in a single instance did we have any result from such treatment. I wish to call attention to the work of Dr. Crile, who reports marked improvement in grandmal following the removal of an adrenal gland. What is the cause of this hyperadrenalism? Is it a chronic focal infection? If so, where is it located?

The discussion of the hypophysis from our personal experience will be continued by Dr. Pollock.

In conclusion I wish to apologize for the manner, on account of its vastness, in which I had to present this important subject, but for its timeliness I have no apology to make.

2551 North Clark Street.

Aural Typhoid Carriers. A. B. Bennett, *Jour Amer. Med. Assn.*, Jan. 6, 1917.

Two cases are reported of this rare condition. In both, living typhoid bacilli were cultivated from the ear discharge. One of these cases, a fifteen year old child, had never had typhoid. The patient suffered an attack of purulent otitis media which left a chronic discharging ear, from the discharge of which typhoid bacilli were isolated. Treatment consisted of local antiseptics combined with typhoid vaccine. The first case was improved but was lost trace of before a cure could be established; the second case was cured. Ed.

IMPORTANCE OF THE INTERNAL SECRETIONS IN EAR, NOSE AND THROAT AFFECTIONS WITH SPECIAL REFERENCE TO THE HYPOPHYSIS.*

Dr. Harry L. Pollock, Chicago.

As you have learned from Dr. Beck's paper, the great problem which confronts us in our work with the ductless glands is the difficulty or rather the inability by any laboratory examination to determine whether we are dealing with a hyper- or a hypo-secretion of one or more of these glands.

It is only by clinical symptoms which present themselves after a great change in the glandular secretion has taken place, that we are able to judge approximately what gland or glands are affected. Not until the physiological chemists can definitely tell us by examination of the blood and the various excretions or secretions, whether there is a deficiency or an over-production of the secretions, will we be able to put our treatment of these glandular disturbances, on a rational basis. However, the knowledge of these mysterious structures has been gained experimentally in a two-fold manner. *Firstly,* by an overfeeding or implantation of the glands themselves in animals and noting the difference between the animals so fed and the corresponding controls; or *secondly,* by removing or partially removing the glands by surgical methods and then observing the results obtained thereby. In the beginning this latter was very difficult owing to the fact that it was almost impossible to reach or remove these glands without the animals dying from the immediate effect of the operation, usually from shock, *i. e.,* before the symptoms arising from the removal could be studied. The thyroid and parathyroid could be removed very easily and safely and the effects studied, but when the removal of the hypophysis, the thymus, the pineal gland or the suprarenals was attempted, the animals usually died so quickly that results from the effects of the surgical interference could not be obtained. For instance, Restelli, who in 1845 first attempted to study the effect of the removal of the thymus, lost ninety-two of ninety-eight animals operated upon and the remaining six lived but such a short time that no conclusive results could be obtained. After aseptic surgery was introduced and surgical technic improved, the animals so operated upon lived until they either died from the effects of the loss of the secretion or were killed in order to obtain and study the pathological conditions and changes brought about by the lack of the necessary ductless gland secretion. During the past decade so much has been written upon these various glands, that an attempt to review the entire literature would occupy too much time and it is not in the province of my paper to do so, but I will attempt in a few words to give you the status as it is now accepted by most of the authorities with, however, a more detailed study of the hypophysis. As the thyroid is the most accessible, and the disturbance either of a hyper- or hypo-secretion is known to all of you, I will not discuss this gland except to state that a hypersecretion results in the condition described first by Basedow and known as exophthalmic goiter, which has been described to you by Dr. Beck. A hypo-secretion in children results in cretinism and in adults, in myxedema. All authorities agree that to be in perfect health all the ductless glands must work in harmony and when one or the other is working excessively or not secreting sufficiently, the glands are thrown out of harmony, *i. e.*, they must undertake to supply the deficiency so caused or an antagonistic gland will secrete excessively, as the inhibitory influence of the affected gland has been removed. We know that the suprarenal as well as the hypophysis acts as a check upon the thyroids and vice versa, and that often when the suprarenal is destroyed or secreting too little, the hypophysis will hypertrophy and attempt to replace in the economy, that which is lacking by reason of the insufficiency of the suprarenal. To what cause this disharmony is due, is still an open question; yet when we at times see such brilliant results obtained by the removal of some focal infection, we can not but believe that these focal points play a great role in the causation of the disharmony and must always be taken into consideration when we study these cases. As Dr. Beck has already explained our views on this subject and given illustrations thereof, I will only emphasize this one point—*search carefully for various focal points of infection in any change in the ductless glandular secretion.*

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*Read before the American Academy of Ophthalmology and Ooto-Laryngology, at Memphis, Tenn., Dec. 11, 1916.

The thymus. This organ formerly was supposed to be an embryonic one and upon birth was expected to gradually retrograde. Karl Basch, in 1902, in experimenting upon dogs which he found were best for his work upon the thymus, discovered that this gland continued to develop for at least four weeks after birth, and then retrograded very rapidly. In the human the retrograde action occurs until puberty when the gland is supposed to have disappeared.

If the animals were operated upon after the fourth week, few, if any, changes occurred in the subsequent growth, but if the gland was removed previous to the fourth week, marked changes in the development took place. The change took place mostly in the bony structures. The bones became soft and weak and the animals could not stand. There was a loss of the calcium salts and when a fracture was produced it healed very slowly and the union was usually a fibrous one and it took months before there was a gradual bony union.

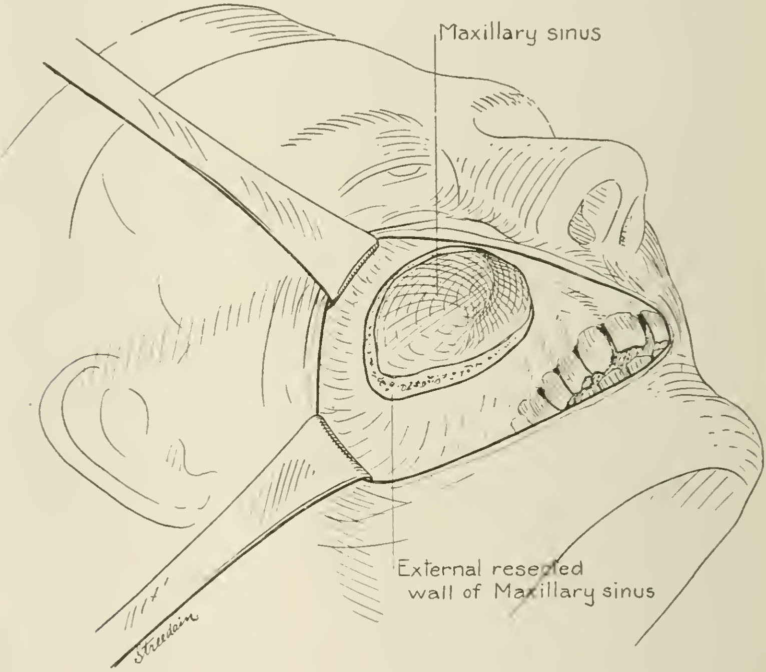


Fig. 1.

This condition corresponded strikingly with the rickets of children. The extirpation of the thymus also heightened the irritability of the nervous system. The thymus also has a distinct relation to the sexual apparatus as shown experimentally. A persistent thymus shows an undevelopment of the genitalia, a castration showing a persistent increased size of the thymus. On the other hand, intravenous injections of thymus extract, manifests itself as a depressent to the heart, a slowing of the pulse, and a fall in blood pressure until death resulted. Post-mortem findings always showed a clot in right ventricle extending into the pulmonary vein which was reported to be the cause of the death. If however, medicine (Hirudin) was first injected which tended to prevent clotting of the blood, a similar lethal dose of thymus could be injected without any symptoms whatever. Sudden deaths from ether in status lymphaticus or persistent thymus is caused by this blood clotting in the right ventricle and if anti-clotting medicine (Hirudin, for example) be first employed, this danger can be obviated.

The suprarenals. This gland has been studied since Addison, in 1855, first described the disease which bears his name, in which he described the etiology as due to the destruction of the suprarenal glands. Many animal experiments have been made by the total removal of both the cortical and medullary portions, but it is impossible to remove either portion separately as they are so intimately connected. Histology proves to us that the main secretion arises from the medulla and from this the extract is obtained. The symptoms from the removal of this gland are a progressive muscular weakening and a malaise. There is a cardio-vascular asthenia shown by a gradual weakening of the heart action, and very often but not always a pigmentation of the mucous membrane and skin. The study of the effect of adrenalin upon the various organs, excretions, blood and metabolism is so complex that I will not attempt to

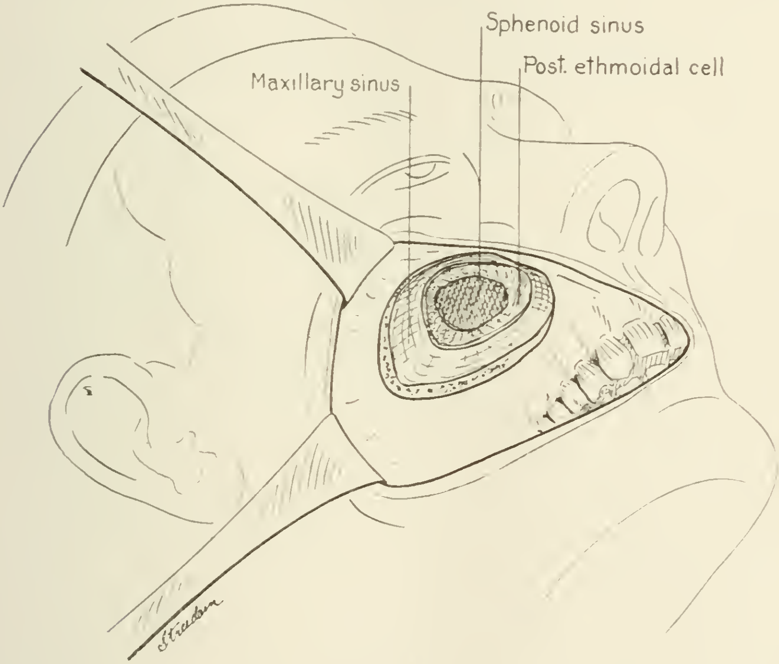
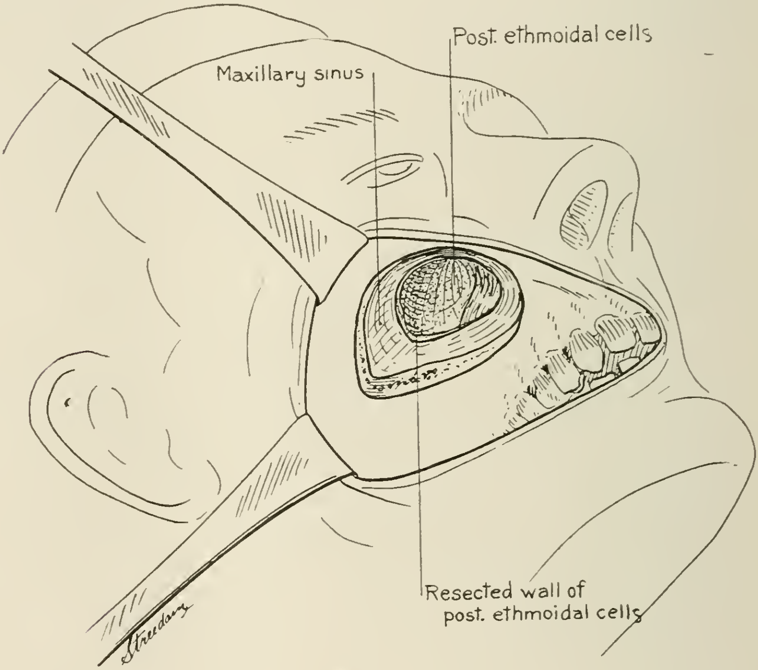


Fig. 2.

describe this in detail but only those which are of interest to us as oto-laryngologists.

The first effect of an injection of adrenalin is the immediate rise of the blood pressure and this is brought about by a constrictor action on the wall of the vessels themselves and not by a stimulation of the heart. This is so thoroughly proven experimentally that the suprarenals are called the glands of the blood vessels. The action on the vessels is of short duration and very often succeeding the constriction there is a dilatation shown by a fall in the blood pressure. Long continuation of these adrenalin injections causes a necrosis of the middle layer of the arteries and a deposit of lime salts therein and arterio-sclerosis is now thought to be due to an effect of the overproduction of the suprarenals, *i. e.*, a slow poisoning by the gland secretion. Of greater importance to us as we shall see is its action on the bones.



Bossi found experimentally that in sheep in which one gland was removed there resulted in a few days symptoms of osteomalacia, viz., prosphaturae and osteo-porose which was proven by x-ray pictures. He utilized this discovery practically, *i. e.*, he treated cases of osteomalacia with adrenalin injections and found that his patients recovered completely and this is now accepted as the rational treatment of this disease.

By the courtesy of Dr. Carl Beck I have some lantern slides of a case of osteomalacia which will be shown and in which the patient fully recovered after hypodermic injections of adrenalin. What value has this knowledge to us as oto-laryngologists? We know histologically that in oto-sclerosis, in the early stage there is an osteoporosis of the bony labyrinth, the same histo-pathological condition as in osteomalacia. If adrenalin can cure these latter conditions, why can it not do the same in oto-sclerosis? It is based upon these facts that we are employing this treatment in our cases of oto-sclerosis as well as in the other conditions outlined by Dr. Beck.

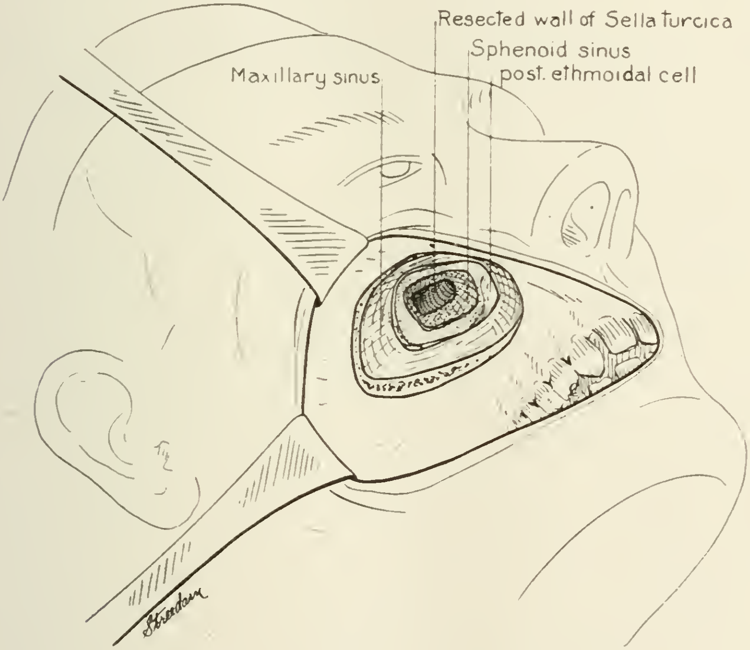


Fig. 3.

In a paper read last winter before the Clinical Society of the North Chicago Hospital, I drew attention to the pathological action of the various ductless glands upon the autonomic nerve system and explained the theory why an irritation of this system would cause an attack of asthma and why an injection of adrenalin would abort same. I am still doing work along this line, but as it is at present only a theory, I will not go into details at this time.

The hypophysis. As has been mentioned before, this is the gland that we desire to discuss more in detail as you will see that in its pathological changes and the various operations to which it is now subjected, it is in closer contact with the rhinologist than are the other ductless glands.

Anatomy. Situated in the sella turcica it is composed of three parts. The anterior or glandular, the posterior or nervous and the pars intermediare composed partly of both lobes. One would that the active physiological therapeutic extract lies in the pos-suppose that the anterior glandular lobe would be the portion which produced the main secretion of the gland, yet such is not the case, as it has been proven experimentally that the posterior lobe furnishes the principal physiological therapeutic extracts. The action of the extract is very similar to adrenalin, but differs in some of its actions upon the various organs of the body, in which they act antagonistically. For instance, the action of both are increased as mydriatics when used jointly; upon the muscles of the intestines, the adrenalin contracts, the hypophysis relaxes and when used together the combination has a neutral effect.

The action of adrenalin on the circulation is far stronger than that of the hypophysis, yet the latter acts longer and can be used indefinitely while there is great danger in continuous use of adrenalin. Not until recent years were experimental operations for the removal of the gland successful. It was presumed that following the total removal of the glands, the animals died from the absence of the necessary secretion but later it was found that such operations could be done and the animal survive. Although we know terior lobe, this portion can be removed with impunity and the animals show but little change, but if the greater portion of or the complete, anterior lobe is removed, the animals immediately remain stationary in their development, there is a great deposit of fat and a non-development or a retrogression of the genitalia.

Clinically and that is what interests us mostly, we are able to distinguish two distinct conditions of the hypophysis, one a hyper secretion and the other hypo secretion.

P. Marie was the first to connect the condition of acromegaly with a hypophyseal tumor and he thought that the disease was the result of a hyposecretion as the gland was destroyed by a tumor formation, such as sarcoma, carcinoma, adenoma, glioma, etc. This was soon shown to be incorrect as many cases of acromegaly showed an apparent normal condition of the gland upon post-mortem examination, and by Roentgen examination the sella was found enlarged. It was soon found that this disease was caused by a hyper secretion but not necessarily an enlargement of the gland. Just as we find a hypersecretion of the thyroid in Basedow's disease with usually a very small thyroid gland. This was further proven correct in several cases where there was an improvement in the condition after a removal or partial removal of a tumor of the anterior lobe.

Hochenegg, in 1908, cited the first case of acromegaly in which the hypertrophy was removed by the nasal route in which there was a diminution in size of hands and feet noticeable within eight days after operation. Within three months there was a complete recovery.

Since then others have cited similar results. We have recently seen a typical case of acromegaly of long standing, in which the x-ray showed an enlargement of the sella and a disappearance of the clinoid processes. The patient consulted us on account of his laryngeal condition. His voice became husky and at times he had impairment of breathing. Upon examination of the larynx by suspension laryngoscopy we found an immense hypertrophy of the mucous membrane of the entire larynx, so that it hung in folds. The microscopical section of a removed portion showed hyperplasia of the mucous membrane and the underlying tissues.

This case has already been reported in detail by Dr. Beck before the Chicago Ophthalmological Society and will appear in the current number of the *Annals of Ophthalmology;* but I simply desire to call your attention to this unusual condition of the larynx which I am unable to find mentioned anywhere in the literature. This case proved to be a mixed one, *i. e.,* while a true case of acromegaly he had had his thyroid removed many years before and subsequently developed a lingual thyroid which a second surgeon removed a short time ago. He then developed symptoms of myxodema.

I now desire to call your attention to another condition, the etiology of which is supposed to lie in some disturbance of the hypophysis, but of which we have no definite proof, *viz.,* diabetes insipidus. Many authors have shown that a disturbance of the pars intermediare either by injury, pressure, or disease will in a large percentage of cases be followed by diabetes insipidus.

The condition of hyposecretion was first described by Froelich in 1901, which he called dystrophia adiposa genitalis. It is now universally known as Froehlich's syndrome. It occurs mostly in young male adults; is characterized by a deposit of fat over the entire body but especially in the breasts and over the pubes. An atrophy of the genitalia and a corresponding loss of its function and a falling out of the pubic and axillary hair also occur. Naturally, with this comes the eye symptoms of any hypophyseal tumor, *viz.*, a bi-temporal hemianopsia, resulting in complete blindness if the condition is not corrected. One of the noticeable co-existing conditions is the great tolerance to sugar. These cases can ingest an immense amount of sugar, without any showing in the urine.

In this connection I desire to report a case of this kind which I have just operated upon by the method first suggested by my associate, Dr. J. C. Beck, and presented before this Society at the Chattanooga meeting in 1913. This consists of attacking the sella turcica by the antro-post-ethmo-sphenoidal route.

Case Report. Mr. O., aged 32 years, referred to me by an oto-laryngologist of Vancouver, B. C., on Nov. 7, 1916, gave the following history:

Married seven years, no family.

For past six months patient has been gradually getting blind. In right eye is unable to tell light from dark and in the left eye is partially blind. Condition came on gradually, blindness starting from outside of eye and going inwards.

Weight of patient markedly increased during the past two years, especially around the abdomen. Never had heavy beard or mustache; has not at present. Skin not dry, only scalp quite dry and hair falling out. Appetite enormous. Bowels regular. Urinates quite often and more than the usual amount.

Patient does not complain of headaches, nor does he perspire. Finger nails all right. Cannot breathe through nose very well.

Nasal examination. General turgescence through nose. Septum fairly straight. Ridge low down on left side. Turgescent inferior turbinate.

Teeth in repair in excellent condition. Pharynx normal. Degenerated small tonsils.

Ears. Has little difficulty in hearing in right ear. Examination of same shows slight amount of cerumen present.

Left ear same condition.

Advise x-rays, thorough blood and eye examination.

The Roentogram showed a flattening out of the sella and a disappearance of the post-clinoid process.

The blood examination was as follows: Red, 4,800,000; white, 8,000; differential, small lymphocytes, 34 per cent; large mononuclears, 5 per cent; poly. morphonuclears, 61 per cent.

The amount of a twenty-four hours' urine specimen was normal; 1,800 cc. and no pathological findings.

I referred the patient to Dr. Harry Gradle for eye examination and he reported as follows:

Right eye: Complete blindness.

Left eye: The temporal half gone, on the nasal half the field was constricted for all colors.

Ophthalmoscopically: Right eyes, fundus normal, except for a slight dilatation of the veins.

Left eye: Advancing secondary atrophy of the optic nerve. Impossible to measure blind spot as this is included in the scotoma.

Patient was given two hundred and fifty grams dextrose and urine found to be free. Two days later three hundred and fifty grams of dextrose given and again urine found to be free, showing an increased tolerance for sugar.

The diagnosis of a hypophyseal tumor having been established, an operation was advised. As before stated, I decided that the best and safest operation was the one suggested by Dr. J. C. Beck. This consists of attacking the sella by the antro-posterior-ethmo-sphenoidal route, and has the advantage over other intranasal methods, in that the space through which we work is much larger and at least one to one and one-fourth inches closer to the sella, than any other intranasal method.

Therefore, on Nov. 12, 1916, I did a preliminary left-sided middle turbinectomy and a thorough ethmoid exenteration. I chose the left side as the tumor was pressing more on the right side, as shown by the complete right-sided blindness.

On Nov. 21, 1916, I completed the operation as follows:

Exposing the anterior wall of the antrum through the canine fossa in the usual manner, I removed the wall with the electric burr. Then with a curette I broke through the post-ethmoidal wall at the junction of the sphenoid, entering the sphenoidal cavity. After breaking down the septum dividing the two sphenoids, I attacked the postero-superior portion of the sphenoid with a special long electric burr and took away the roof, thus exposing the hypophyseal region. A soft tumor mass was felt but I decided not to attempt to remove it at this time, depending on the effects of the decompression, and if necessary, at a later time to remove it completely.

Patient made an uneventful recovery from the operation, but too short a space of time has elapsed to expect any great amount of improvement in his symptoms.

This is the third case of hypophysial tumor which we have operated upon by this method, the former two having already been reported by Dr. Beck. The first case, a cyst of the hypophysis, now, after two and one years has had a great improvement in all his symptoms and is working every day, something impossible for months prior to the operation.

The second case recovered from his operation, a tumor of the hypophysis (sarcoma) having been found, but succumbed to the disease some months after leaving our care.

2551 N. Clark Street.

Don'ts in Hemorrhage and Blood Diseases. MAURICE CHIDECKEL, *Medical Record*, March 10, 1917.

Some of the important "don'ts" for the rhino-laryngologist are the following:

Don't always blame the nose for epistaxis; many constitutional diseases will cause nosebleed.

Don't give any fatty substance for relief of constipation in bleeding patients; the fat when absorbed may interfere with coagulation.

Don't fail to estimate blood pressure in patients with hemoptysis or epistaxis.

Don't rely on calcium salts in any form of hemorrhage.

Don't give a favorable prognosis when there are skin hemorrhages in diphtheria; it signifies a general toxemia and the result is invariably fatal.

Don't use ergot intravenously in any form of bleeding; the cardiac muscle may be paralyzed by its action.

Don't fail to administer citric acid in all conditions where thrombosis is threatened; it lessens the viscosity of the blood and prolongs coagulation.

Don't give coagulen in any hemorrhage unless well diluted (1 gm. to 10 c.c. distilled water).

Don't resort to plugging the nares as a first means of stopping a nasal hemorrhage; application of strong vinegar is very efficacious.

Don't employ adrenalin when there are other means at hand; it is only a temporary vasoconstrictor, soon becoming a vasodilator, leading to a renewed and greater hemorrhage.

Don't forget that quinsies and suppuration of the pharynx may lead to very serious hemorrhage. ED.

THE CAMPAIGN VOICE.

Dr. L. D. Alexander, Jr., New York City.

Some idea of the bodily and vocal strain required of a candidate for high office in this country may be obtained by considering that in the recent campaign extending approximately three months, thirty-two states were visited, about 30,000 miles in train and automobile travel, and over 500 speeches made.

Such a program as this requires extreme physical fitness and involves great mental and vocal strain.

In spite of modern conveniences and comforts as represented by special train and hotel accommodations, to the candidate probably not accustomed to extended travel the strain is indeed severe.

Sleep on the train is never restful as schedules must be maintained. This involves if not moving, parking in some noisy station or adjacent yards, often on the next track to a cattle train, or other noisy freight.

At times a night is spent in a hotel where surroundings and bed are strange. Sleep, therefore, is one rather from exhaustion than of peaceful nature.

Meals as obtained even on a private car are irregular and often times principally of canned goods; so, too, interruptions of one sort or another are always occurring.

Lack of appetite and constipation are natural sequelae to this irregular sort of life. The mental powers of a candidate are put to a great strain. Unending conferences, interviews, letters and telegrams, newspaper articles, criticism, all play their part and take their toll.

To offset this, is the stimulus of the goal in view, the plaudits of press and people. I have seen a candidate after a day of mileage and speeches attend the evening meeting exhausted and weary, and in a state of extreme mental tension, return to the train, soothed by the applause of the audience; weary, yes, but mentally relaxed.

After a few days' use, the voice lacks luster and is devoid of head resonance. Occasionally in the midst of a sustained sentence there occurs a distinct break due to the lodgment of mucus. The further effort dislodges this and the voice clears for a time. The prolonged effort of speaking causes a congestion of the entire head. A distinct external congestion of the nose is noted while examination immediately after speaking reveals turgescence of the turbinate bodies and congestion of the entire membrane. Speaking in overheated and underventilated halls requires so much effort that frequently the candidate is in a dripping perspiration at the end of his speech.

Examination of the throat at the end of a day's speaking reveals a state of congestion from pharynx to trachea; the palatal pillars and uvula are relaxed. The false cords are congested, the true cords are congested and slightly edematous with accompanying partial paresis.

A sticky secretion, mucoid in character and very adherent, may be noticed between the arytenoids and in the adjacent trachea. Attempts to remove this cause a frequent dry cough which, if not relieved, may cause a restless night.

A laryngologist is part of the necessary equipment of a modern campaign, and I shall try to outline the duties which are expected of him, together with the medical treatment indicated.

It is advisable to make a thorough examination of the patient if possible before the beginning of the campaign, to suggest appropriate treatment for such abnormal conditions as may be present. The candidate should be taught breathing exercises which will give the maximum support to the voice with the least amount of effort. I advocate the superior costal elevation with inferior costal and diaphragmatic respiration as described by H. Holbrook Curtis. Particular attention should be addressed to the voice. I believe that even at the sacrifice of pleasing quality, the patient should be taught to speak using fully his facial resonators. The voice should be pitched in the medium register or slightly lower and well forward. Speech should be slower than ordinarily with careful enunciation. I employ vocal exercises in humming with consonant phrases such as ming, mong, ding, dong, maw, mo, etc. (Curtis). These latter are sung for a few minutes several times daily.

Such exercises strengthens the laryngeal muscles, and if learned in advance will prove of great benefit should future need call for their use. I am in the habit of letting the patient select an imaginary spot or person about equal to the distance well back in the average theater audience and practicing throwing the voice at that spot.

Unfortunately, one rarely has the opportunity of seeing the candidate until perhaps called to go on tour with him.

The attending physician should carry with him appropriate equipment including a first-aid outfit and minor surgical and medical appliances, for should occasion of emergency arise he may be called upon to treat things outside of his specialty. A modern campaign train may carry as many as sixty or seventy people, consisting, besides the candidate and possibly his family, of secretaries, stenographers, newspaper representatives, local politicians and service.

A fairly extensive office-outfit should be taken, some sort of compressed air apparatus is advisable. A steam inhaler, ice bag and the customary set of examining instruments, spray solutions and atomizers. I am in the habit of using an alkaline spray, an astringent spray, (glycero-tannin), an oily spray and also argyrol and adrenalin.

I know that the day of the spraying laryngologist is over, and one trip I trusted to laryngeal syringes and applicators. Since many of the treatments are perforce on a swaying train running from forty to sixty miles an hour, such delicate treatments are well-nigh impossible. I had much better success with the present apparatus.

It should be the duty of the physician to be near the candidate at all times for in case of emergency he would naturally be the first called upon. One has but to recall the shootings of McKinley and Roosevelt to realize the necessity of this. At the meetings, the method of delivery and condition of voice should be noted.

I make it routine practice to see the candidate twice in the twenty-four hours; once preferably in the middle of the afternoon and before the long speech of the day, and again after he has retired.

The day treatment consists in a thorough cleansing of the nose and throat followed by a laryngeal spray of argyrol directly upon the cords during a deep inhalation. This is followed a few moments later by a few deep inhalations of an oily solution. At this time inquiry is made as to the patient's general condition, and appropriate advice given.

The routine night treatment is a thorough massage of the throat, say for fifteen minutes, gentle alternating stroking movements emptying the jugular veins together with rotary massage over the larynx itself, followed by a steam inhalation of the essential oils and balsam, in an alkaline menstruum. I use with satisfaction for this purpose a Simplex inhaler. The steam application should last from five to fifteen minutes according to the condition of the voice.

Unfortunately, a routine treatment is not usually sufficient to meet the ravages of overuse of the voice. It is necessary that the physician should employ much judgment as to cutting down certain speeches and eliminating others. The human side of his position is most trying, disappointed politicians and crowds of people who may have come miles and waited sometimes for hours, are not lightly to be disposed of.

It is an occasion where the most important thing, vocal rest, is the hardest to insist upon. However, the physician must be firm in his position and yet must realize how much is at stake.

It is well to remember that the campaign voice is not the singing voice, and that a pretty bad vocal cord can still be made to make a pretty good speech. When the voice is getting bad and the engagements have to be met, I insist on silence or limited whispering between the speeches. The ice cap is of use here, applied for thirty minutes on and thirty minutes off. This is not objectionable to the patient. A hand nebulizer with an oily spray to which a little adrenalin has added is given to the candidate for use just before his speech. Every one who uses his voice seems to think that some throat lozenge is essential. I have little faith in the efficacy of lozenges of any sort in laryngeal conditions. The least harmful and certainly the easiest upon the digestion is a glycerin pastile of lactucarium. These have a soothing effect upon the pharyngeal mucosa and psychic effect of value.

Certain conditions require additional medication. If the paresis is pronounced it is probably due to excessive bodily fatigue. Here, strychnin, one-fortieth of a grain, three or four times daily, should be given, and at 10 a. m. and 4 p. m. additional food in the form of an easily digested broth with a few crackers should be taken. Application of iodin (kali iodidi grains x, tincture iodin one-half oz., glycerin one and one-half ozs.) to the pyriform sinuses and base of the tongue are of distinct value in reducing the congestion present. Care should be taken that the solution does not enter the larynx itself.

When the intra-arytenoid space and neighboring trachea are covered with accumulated mucus, deep inhalations of iodoform in ether, are grateful. If the odor of this is objectionable to the patient, medicated oil may be dropped into the larynx by means of a proper syringe. These solutions do not cause relaxation of the cords as would steam.

Adequate rest in bed is essential and I insist upon at least a half hour's rest in a prone position before the evening speech.

130 West Fifty-ninth Street.

TRAUMATIC DEFLECTIONS OF THE NASAL SEPTUM AND THEIR TREATMENT.*

Dr. Otis Orendorff, Canon City, Colo.

It is difficult to conclude the exact part that traumatism plays in deflections of the nasal septum. Different observers are prejudiced by the local social conditions and from the angle with which they approach the subject.

At any rate, trauma is undoubtedly quite a factor and its effects may sometimes be added to the influence of heredity, the Gothic Arch adenoids, excessive development of the vomer and stigmata of degeneracy. It is true that careful inquiry will reveal that nearly everyone remembers having suffered a serious bump on the nose at sometime usually in early life and also that nearly everyone has a crooked septum; yet this history should be seriously considered in a study of the case. The etiology is of decidedly practical importance because the old traumatic cases are more difficult to operate upon and are more likely to be followed by perforations because of tough, thick, firm adherent periosteum and the destruction of the normal anatomical relation of the parts and a resulting fibrous matting together of the tissues. There is frequently a dislocation of the columnar cartilage added to a compound comminuted fracture of the septal cartilage, vomer and perpendicular plate. After an injury to the septum there is frequently a large exostosis following what was at first a slight fracture with a small deviation and this has a tendency to increase with time and is more marked when the fracture is sustained early in adult life.

According to Mosher in most deviations due to a symmetry of growth the axis is horizontal and those due to trauma have the axis vertical and are found in the anterior part of the nose.

Unfortunately, we seldom see a fracture of the septum immediately after the accident as the patient is almost always first taken to a general surgeon or if the external parts are not injured and the nose soon regains its normal contour there is frequently nothing done in the way of repair at all. It is only after it is found that the nasal function is not restored or complications have arisen that the patient seeks relief from the rhinologist and by this time adhesions have taken place that may make repair a difficult procedure. On the other hand, my slight experience has taught me that an immediate or early submucous resection would have made a restoration easy, successful and permanent. As an example the different conditions found in traumatic and non-traumatic deflections, quite recently two cases turned up at the same time, both healthy young men of the same age. In one there was absolutely no history of traumatism yet the deviation was so great that one nostril was completely occluded and the obstruction reached from the tip of the nose to the posterior edge of the septum where the ridge was crowned by a down turned lip. Upon operating this case the membranes separated ver yeasily and the actual time was an hour and five minutes with 100 per cent perfect result. The other case had a history of normal nasal function until five years ago when there was a fracture of the septum during a game of football in this city. Since then there have been symptoms of obstruction and as the deviation was not great and the operation seemed simple in spite of the history I advised it and got into a lot of trouble. Along the line of the old fracture the mucous membrane, perichondrium, cartilage and bone were almost one structure and for over two hours resisted the most careful and patient efforts to separate them and a very fine tear resulted in the convexity opposite a badly bruised area in the concavity. After treatment was not neglected yet there is now a beautiful perforation that constantly entertains my former friend with its musical productions. Possibly more ability would have produced better results but the same skill or lack of skill was applied in the other case that was not traumatic and the result was, as stated, perfect function.

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*Read before the Western Section, American Laryngological, Rhinological and Otological Society, Colorado Springs, Colo.

Until recently I treated these cases of fracture by replacing the parts as well as possible (and somehow even this was not a satisfactory procedure) and then by attempting to hold them in position by different kinds of splints and tampons which were always a nuisance to both the patient and myself, and after several weeks of suffering he would be discharged with a rough looking job and perverted function and possibly finally require an operation for relief. I have also seen septums that were under the care of others immediately after the accident and the results were no better than my own. These septums are not only gotten back into place with the greatest difficulty but it is very hard to hold them in position without packing that is tight enough to produce distress and possibly necrosis.

In my mind there is an uncertainty about the limit of age in both the young and old at which any submucous resection should be done and this applies to the early repair of traumatic cases also, and should this paper be favored by a discussion I hope that members of the section will give the results of their experience in the extremes of life as we are warned to be careful especially with children.

Fortunately nature is kind to the noses of young children, for the tissues are too soft to be fractured easily and as the asymmetry of development has not yet taken place deviations are seldom found.

I have cautiously, by means of a sort of modified window resection straightened septums or rather removed spurs in children but not immediately following injuries, and some of them have been watched for several years and there is no deformity. However, I have not done a radical operation in children and have not operated at all under the age of ten years. I believe we would be justified in doing a regular submucous operation and if necessary a transplantation of the cartilage in a very young child if the injury were a very severe one and the chances of resulting obstruction were great. While the operative field is small the tissues are soft and elastic and the incision is probably already partially made because of the compound nature of the fracture.

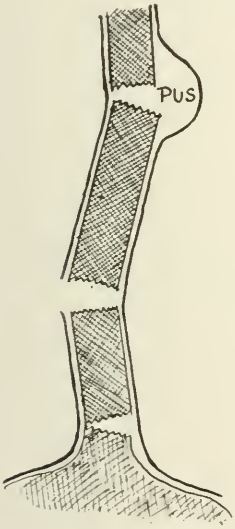

Fig. 1.

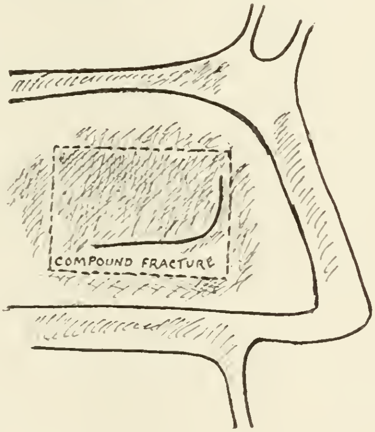

Fig. 2.

The importance and ease of an early submucous resection was first brought to my attention by a miner 40 years old who was caught in a "cave in" and as he was looking up a timber struck him across the nose about an inch above the tip almost severing the member from the face. He was given splendid attention by a surgeon who replaced the parts and held them with splints and sutures. I saw him about a week afterwards and aside from the swelling, which would be expected, all was going well, but this induration failed to subside and as there was but little breathing space, and the doctor and the patient insisted, I did an ordinary resection about two weeks after the injury. The torn mucous membrane had healed and the initial incision was made just anterior to it in sound tissue at the usual location. The periosteum readily separated from the cartilage and bone, in fact it was hardly attached to the conglomerated mass that was retained between its surfaces. This mass was shelled out easily and the mucous membrane replaced and rather firmly packed on both sides for twenty-four hours with a perfect result ensuing.

Another case was that of a boy 16 years of age while playing baseball, and incidentally a large percentage of traumatic fractures are due to baseball, football and volleyball, was struck on the nose by a batted ball with sufficient force to produce a compound fracture as shown in the sketch. The injury was followed by considerable external and internal swelling which did not subside as readily as usual and there was constantly a degree or two of fever. After waiting four or five days he was brought to me and operated by using the unhealed wound in the mucous membrane as the only incision, it being sort of an L shape. The perichondrium separated very easily on both sides but to our surprise we ran into a pocket of pus at the upper part of the side of the concavity. There was probably a cc. of it which accounted for the tumor-like swelling at this region which subsided at once. All of the loosened bone and cartilage were removed and the displaced pieces straightened with a resulting septum that was smooth and even on both sides. A light packing was used over-night, temperature was normal the next morning and the patient made a rapid recovery returning to his home in a week.

The treatment of these cases can hardly be classed as immediate resections but I am sure that the earlier that the operation is done following traumatism that the easier and more successful it will be and should opportunity offer and the case be a severe one I shall insist on operating at once.

In conclusion, traumatism plays an important role in septal deflections and old traumatic cases are more difficult to operate and the difficulty increases with the duration of time since the injury.

The irritation caused by these deflections produces a stimulation of the growth of the tissues which acts as a vicious circle.

Prompt resection following a fracture is an easy procedure and affords the earliest relief and quickest recovery.

FRONTAL SINUSITIS A PROBABLE CAUSE OF ACUTE NEPHRITIS.*

DR. GEORGE F. KEIPER, Lafayette, Ind.

Last year before the joint meeting of the Middle and Western Sections of the American Laryngological, Rhinological and Otological Society, in a paper entitled "Mastoiditis, a Probable Cause of Acute Nephritis,"[1] I reported two cases in which each instance the mastoiditis was at least an accompaniment of the coexistent acute nephritis and its most probable cause.

As stated in the paper, the literature upon that subject is quite barren. Up to that time but two reports had been made, one by Dr. Joseph A. White, of Richmond, Va., in 1904, entitled, "Report of a Case of Mastoiditis Complicated by Nephritis and Erysipelas," and one by Dr. Thomas Hubbard in 1908, on "Diabetes and Bright's Disease in Relation to Suppurative Osteomyelitis of the Mastoid." Both papers were read before the different sessions of the American Laryngological, Rhinological and Otological Society.

In the discussion that followed the reading of my own paper, Dr. Derrick T. Vail, of Cincinnati, reported an additional case. To date these are all the reported cases.

As a supplement to my own paper of March 2, 1915, I now report a case of "Purulent Frontal Sinusitis Showing Coexistent Acute Nephritis."

Chester H., aged 15, was referred to me by his physician, Dr. George R. Clayton, Jr., of Fowler, Ind., January 11, 1916. I saw the patient immediately after his arrival at St. Elizabeth's Hospital in this city.

His history is briefly as follows: About a year ago his forehead became very tender over the left eye and he was very sick. Under the treatment pursued at that time the patient made a quick recovery after, as his father stated, "the nose broke and ran a large amount of matter." This was evidently a frontal sinusitis. Thereafter he appeared perfectly well until his last illness.

For two weeks prior to his admission to the hospital, the right side of his forehead had been very tender to touch and pressure. Treatment had been of no avail and, at last, yielding to the importunities of his family physician he was brought to Lafayette. His forehead over the right eye was very tender to touch and pressure. His mind was confused and times he manifested mild delirium. His pulse was 124 and his temperature was 103.2° F. He was taken to the Roentgen ray laboratory and skiagraphs of the frontal sinuses were made. These were negative.

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*Read before the American Academy of Ophthalmology and Oto-Laryngology at Memphis, Tenn., December 12, 1916.

[1] THE LARYNGOSCOPE, May, 1915.

A blood count was made with the following result: Hemoglobin, 90 per cent; red blood cells, 4,400,000; white blood cells, 18,400.

Differential Count: Polynuclears, 86 per cent; small lymphocytes, 12 per cent; large lymphocytes, 2 per cent; eisonophiles, absent: nast cells, absent.

Examination of his urine was as follows: Color, dark amber; specific gravity, 1020; reaction, acid; albumen, present; sugar, absent.

The microscope showed: A few epithelial cells, a few white blood cells, amorphous urates, calcium oxalate crystals, a few granular casts.

For the general physical examination Dr. Frank B. Thompson, of this city, was the consultant. He did not find any lesion of the heart, lungs or blood vessels.

Examination of his nose showed it free from pus. His throat was normal. This was at two o'clock in the afternoon of the day of his admission to the hospital.

At 4:30 p. m. his pulse was 140 and his temperature was 104.2°.

At 7:30 p. m. his pulse was 130 and his temperature was 102.2°.

At 10:30 p. m. his pulse was 144 and his temperature was 103.4°.

January 12:

At 3:00 a. m. his pulse was 140 and his temperature was 102°.

At 7:00 a. m. his pulse was 142 and his temperature was 102°.

At 8:00 I opened the right frontal sinus externally. It was full of pus which was thoroughly cleaned out. No fault could be found in the posterior table of the frontal bone. The fronto-nasal duct was occluded. This was opened and enlarged. His condition becoming bad we gave the nose no further attention and hastily completed the operation and returned him to his room. On recovery from the anesthetic he became very noisy. Morphin sulphate was given him in quarter grain dose to quiet him. This was at 10:15 a. m. Respiration became rapid and the pulse weak. Camphor oil was administered subcutaneously in a thirty drop dose. This accomplished nothing. The delirium deepened for a while and then he gradually failed and died at 3:45 p. m., the same day. No autopsy was permitted.

The pus obtained during the operation was inadvertently destroyed and hence it is regrettable that no examination for its bacterial content was possible.

I have searched the literature for a parallel case in vain. It is barely possible that many more such cases exist and if care is used in making a thorough physical examination, as well as a local one, this complication may be more frequently observed and we will be in a better position to declare that purulent frontal sinusitis may be the cause of acute nephritis. In fact every case that comes before us thus should have all the advantages offered by a complete physical examination.

14 North Sixth Street.

Further Observations on the Connellan-King Diplococcus Throat Infections; Their Sequelae with Especial Reference to Arthritis. JAMES J. KING, *Jour. A. M. A.*, Jan. 13, 1917.

Four cases are described and these show:

1. The frequent presence of the Connellan-King diplococcus in the crypts of the tonsils or at the roots of the teeth in arthritic patients suggests that it may be specific, and that a simple tonsillitis may be followed by very serious complications, due to an absorption of chemical toxins.

2. The danger of a general sepsis following tonsillectomy might be eliminated if a culture were taken from each patient.

3. If the focus of infection in arthritis exists in the tonsil, the treatment should consist in the injection of an autogenous vaccine until all infection is cleared up and then the tonsils should be removed by enucleation.

4. The blood changes in the Connellan-King diplococcus infections seem to be a simple anemia and, in a few cases, a slight increase in the eosinophils from 4 to 6 per cent.

5. In some cases symptoms other than those for which treatment was instituted have disappeared. For instance, in one patient with arthritis and marked ethmoiditis the culture was obtained from the throat. Within two weeks the ethmoiditis had cleared up, while the arthritis was only slightly relieved. Another patient with serious gastric disturbance, who had found it necessary to remain on a strict diet, was able to eat almost anything after she had received the treatment with the autogenous vaccine. ED.

CASE OF NASAL PAPILLOMA. SURGICAL REMOVAL FOLLOWED BY X-RAY TREATMENT.

DR. CLARENCE E. IDE, Los Angeles, Cal.

I would like to supplement Dr. Callison's article, in the March (1916) issue of THE LARYNGOSCOPE, on the subject of "Papilloma of the Nose," by reporting a case.

Mr. H. W. F. came June 4, 1915, complaining of obstruction of the right naris by a growth which had been cauterized several times, only to recur. A septal spur had been removed from the right naris eight or nine years previously. Later the patient underwent an operation farther back in the same naris. The same surgeon had then treated the growth by cauterization.

The patient had suffered a nervous breakdown three months before coming for examination in June.

Examination showed a cauliflower growth on the anterior portion of the septum and another at the anterior extremity of the right inferior turbinate bone. The naris was already narrowed by deviation of the septum to the right below, to the left in the other naris, above.

Each growth was approximately 1 c.m. square, and the two met to close the naris.

A specimen of the growth was submitted to Drs. Brem, Zeiler and Hill for examination. The report stated that the growth had a stroma of connective tissue surrounded by a thin layer of squamous epithelium, the center being composed of myxomatous tissue. The epithelium was reported to be regular with no extension into the growth, thus giving no evidence of malignancy.

The growths were removed with the knife down to the bone and cartilage underlying them. The patient was then referred to Dr. Soiland for x-ray treatment (because the pathologists had reported active mitotic changes as going on in the nuclei of the growth) under which perfect healing took place in a short time.

There was no recurrence, but a very small extension anteriorly was discovered later and removed. This was not located on the area operated previously.

In December, 1915, the nose was free from all growth, and this month—July, 1916—conditions are equally favorable.

At the present time I should advise treatment by radium rather than by the x-ray.

Suite 1120 Brockman Building.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

December 20, 1917.

DR. H. L. LYNAH, *Chairman.*

Spreading of the Upper Dental Arch to Increase Space in the Nasal Fossae. Third Presentation of the Case. DR. EDWARD A. BOGUE.

The patient, a young man, first appeared before the Section on February 23, 1916. The right nasal meatus was entirely occluded and had been so for some time. The Glatzel mirror showed no trace of moisture from the breath. The screws of the spreader were started to work that same evening, after the patient had been examined by a number of the gentlemen present. At the following meeting of the Section, March 22, the two halves of the upper maxillary had been spread by the action of the screws, so that the ends of the cuspid teeth were eight and one-half millimeters further apart laterally than they had been at the date of the previous meeting. Two entire turns of the forward screw were made after the March meeting, gaining sixty one-hundredths of an inch each time. After that, the apparatus had remained stationary from that time to this. During the summer an elastic arch was adapted to the lower teeth, which have gradually been spread to the articulation which could be now seen and which was more nearly perfect than was often found among teeth that were called regular. At the present date the nasal passages were both ample and had remained so since the last summer, except for a few days, when a slight thickening, due to cold had been noticed. The teeth generally looked better than before they began their operation. Mastication was far better than it had ever been before and health had improved continuously. This much had been accomplished within the year.

Case 2. The patient, a young man, was twenty-five years of age and had what would be called an unusually good occlusion of the upper and lower teeth. He was sent to Dr. Bogue by his physicion, because of difficulty in breathing through the left nostril. Adenoid and tonsils had been removed at four years of age. Adenoid was again removed at eighteen years of age. A turbinate operation was made in 1909, since which time color and weight had both been lost. The most noticeable defects in the dental arches were that they were rather narrow at the bicuspid region and the cuspids and lateral incisors, both above and below, were twisted, showing that when they erupted there was not room in the arch for them to come in, in perfectly regular positions. In the hope of improving his nasal breathing, the rapid spreading appliance was adapted to his teeth. The upper arch at the second biscuspid region was thirty-one and one-half millimeters broad when the patient first came in. On August 4th they began to apply pressure to spread these arches. On October 11th they had spread the upper arch to thirty-six millimeters in breadth and the lower arch of teeth was gradually coming into nearly correct occlusion, as exemplified in the model of December 6th.

Regulating appliances were now being applied to exert torsion on the lateral incisors and cuspids, which were irregular at first, to bring them into proper alignment in the broadened arches. This was orthodontia, in contradistinction to the operation for rapid spreading, which was done for the sake of its influence upon the nasal passages.

DISCUSSION.

Dr. Theodore W. Corwin said he had the pleasure of referring the case to Dr. Bogue and he wished to substantiate the statements made in regard to it. He was unable to keep personally in touch with the patient, because of illness, but he could with great confidence, tell those present that there had been a very great increase in respiratory ability, which in the nose had now become quite free. The patient had a deflected septum on the right side, which had diminished very materially. The case of the young man was somewhat peculiar and interesting, because his father had the same trouble of narrow dental arch and very high palate; he was a confirmed mouth-breather and his face showed the same deformity.

Dr. Corwin hoped that the formation in the case would become permanent. The patient's mental faculties were very active, however, but he had had all sorts of nervous tendencies. His general health was now very much improved. He had had no pain during this treatment. It was very interesting from the dental standpoint, because there had always been great fear expressed that any separation of the jaws had to be met by surgical operation of severity, liable to produce pain and shock. It seemed in this case that expansion of the aperture had relieved the nervous tendency and irritability.

Dr. Francis J. Quinlan asked whether in the case of Dr. Bogue there had been a removal of both turbinals. He said the condition had been very much improved by this treatment, but not altogether, and the splendid work of the doctor's would have to be further supplemented because there was still obstruction in both nostrils posteriorly. The patient had two large posterior hypertrophies, which the extensive treatment had not altogether overcome and later on the obstruction would return if these hypertrophic masses by suction kept up a rarefication of air in the nasal chamber.

Dr. William H. Haskin said he had read a paper on this work in 1911, and that Dr. Bogue is to be congratulated on these cases. The patient mentioned by Dr. Quinlan had been operated upon but the result was not one to be proud of, and if the case were going to get relief he would have to have still wider expansion or undergo another operation on the septum. Dr. Haskin said that Dr. Bogue had treated two members in his own family by rapid spreading of the superior maxillae and both had improved. His own boy, fifteen years old, now weighed one hundred and thirty-five pounds and since the work was done six years ago he practically had never had any colds or serious illness. To get nasal relief, rapid spreading should be done, even more rapidly than done by Dr.

Bogue. The jaws should be spread in three or four weeks, if there was to be actual nasal relief. In young children the septum actually forces itself down into the separation between the superior maxillary bones and tends to fill the space. The case referred to by Dr. Corwin illustrated what happened when one took a large piece of cartilage out of the nose. Regardless of improvement of the teeth, which was a long, slow process, nasal relief should be obtained within three to four weeks. If the patient then wanted to go on with the treatment and have the teeth regulated, that was another question. The actual benefit from expansion should be obtained in a very short time.

Dr. Lewis A. Coffin said he had looked at this patient's jaw and wished to congratulate Dr. Bogue on the results as shown by casts taken before and after. Dr. Coffin said he had also examined the patient's nose and while he could not say how much breathing-space he had previous to the spreading of the jaw, he found the breathing space on the right side very much encroached upon by a large exostosis accompanying the nasal deviation. Perhaps it was the thickening which had prevented this particular septum from "dropping into the space caused by the spreading." The spreading of the jaw must add materially to the better looks of the boy and when his teeth have been regulated he should seek out a good rhinologist who will do a submucus resection of his septum when he will become not only a better looker but a good breather.

Dr. **William H. Haskin** said no angular deviation of the septum would disappear by spreading the jaws. This boy was taken too late. If it had been done when he was five or six years old the septum would probably have developed normally and the displacement of the premaxillary wings would have been avoided.

The benefit derived in both of the cases presented undoubtedly was due to the increase of the width of the anterior nares.

Dr. **Edward A. Bogue** said he felt thankful to the gentlemen who had been kind enough to speak of these cases and that Dr. Haskin ought to transfer the age at which the best results are to be obtained, back to about five and one-half to six years. One of the cases presented this evening was Dr. Corwin's and the other was also from Jersey, who came to Dr. Bogue after all these operations by various rhinologists. He was experimenting to know whether in that case he could succeed in obtaining permanently improved nasal passages. In Dr. Corwin's case his hopes had been fully gratified. He thought Dr. Black, of Milwaukee, was correct, and Dr. Haskin seemed to confirm his view that when the bones of the upper maxillary are spread apart sufficiently in a young patient, the resiliency of the cartilaginous part of the nose was sufficient to drive down a goodly portion of the cartilaginous septum between those separated bones. He did not dare to speak about the bony part. Dr. Corwin's patient had a spur on the right side; he doubted very much whether that was going to be improved by his spreading operation.

He wanted to speak of another subject. He had some eighteen hundred plaster models of mouths. Among them all he did not know a single one that had grown in a lateral direction that, at the age of four, five or six years of age, did not have a width of the upper arch greater than twenty-eight millimeters. A certain surgeon brought him his little boy, who came with his mother, a gray-haire lady. Dr. Bogue persuaded her to sit down while he measured her upper maxillary arch, which he found to be twenty-six and one-half millimeters in breadth. It had never grown in width since she was four and one-half years old, and he had found no case in which lateral growth had ever taken place unaided unless the width of the temporary dental arch exceeded 28 millimeters. He found he could spread these cases in little children and obtain astonishing results. He had one little patient of six years, who was deaf and had to be talked to in quite a loud voice, who inside of four months could hear a low voice. The Eustachian tube seemed now entirely cleared and also the nasal passages. If they commenced to correct mouth-breathing before it had become confirmed they would get a much better success than could be obtained later on.

A Case of Tic Douloureux Treated by the Avulsion Method of La Place.

Dr. H. Holbrook Curtis.

(To be published in a subsequent issue of The Laryngoscope.*)*

DISCUSSION.

Dr. Faulkner said the result in this case was an excellent one that the avulsion method was undoubtedly a recognized procedure. In these cases the three procedures were alcohol injection, the avulsion method, and gasserectomy. As far as therapy and surgery went, he thought that alcohol injection, when successful, was just as successful as any other method. Success was merely a question of technique of the operator. The last Tuesday evening he had reported twenty-one cases before the neurological section, treated by alcohol injection. Twelve had been successful and nine cases unsuccessful. In each one of the nine unsuccessful cases he did not get the nerve. His experience had lasted over three years and he had not had a single recurrence in a case where he was certain he had got within the nerve sheath. A good many of these cases came to him after they had already received alcohol injections. The cases at first were a little discouraging but with improved technique, results were better.

Dr. Faulkner said the technique was to inject alcohol into the sheath of the nerve. In putting in the needle the landmarks were not always followed, but if they knew the anatomy on cadaver they would determine the route by the sense of touch on the point of the needle. A one per cent cocain solution was put in the skin and the needle then pressed in the direction of the nerve. The patient would tell the operator if he got the nerve. If so, inject a few drops of cocain in the nerve. About three minims of a one per cent solution of cocain was usually injected. And if in the nerve, anesthesia occurs in a few seconds. In some cases the nerve could be gotten at the first attempt, but not very often. In one patient he had been unsuccessful three times, but at the fourth time he got the nerve. The second division seemed to be the one most commonly affected.

Dr. Faulkner thought that with a more perfect knowledge of anatomy and experience on the cadaver it would be possible to get nine out cf ten successful cases. He said this method should go before the operative, but if one could not get the nerve, the operation which Dr. Curtis described was a justifiable procedure.

Dr. MacKenty said that the Section was indebted to Dr. Curtis for his very able description of the operation.

In regard to Dr. Faulkner's results, he could speak with conviction, as he had observed the work and the results. He considered the work of nerve injection a one-man job. Few had the anatomical knowledge possessed by Dr. Faulkner or had spent the time to acquire the technique. The poor work done by many was due to lack of the qualities possessed by Dr. Faulkner. Personally, he would not attempt it, knowing how difficult it is to one doing it only occasionally.

DR. WILSON asked whether he understood the doctor to say that such cases had not returned in a number of years. It had been his experience that most of these cases returned after injection in a year or year and a half. The cases that returned earliest were cases with arterio-sclerosis, which had been his observation. He believed, however, that this operation had a place because there were times when they could not make a diagnosis of what was causing the tic douloureux. In regard to the remark that they should go to the root of this thing, Dr. Wilson said the root could not always be found.

DR. H. HOLBROOK CURTIS said he had looked up the literature on the subject, extending at least over fifty years and the best article written was by an old-fashioned physician, who stated that no focal lesion could be discovered. This patient had no focal lesion so far as the speaker could see.

DR. WILLIAM H. HASKIN said that he had never seen a case in which he could not find the cause for the pain, that he had never seen a true case of tic douloureux. He had several specimens of bones where the floor of the sphenoid sinus was a mass of osteomas. These undoubtedly caused pressure on the nerve, which must have caused pain during the patient's lifetime. He had seen the same condition in the antrum of highmore, the exostoses growing on the lateral walls of the sinus. He had two specimens with distinct exostoses over the canal of the nerve as it ran along the outer wall of the antrum of Highmore. It was almost impossible to find these exostoses in a living patient, but they do exist and in cadavers can be found in a large number of specimens. He believed that there was a distinct disease of tic douloureux, but that it was a very rare disease; and he did not think that avulsion of the first, second, or third branch of the nerve would actually cure the trouble. The only cases he had heard of that had been cured were treated by the removal of the superior cervical canglion of the sympathetic. Dr. Fermier in Lyons, France, had reported a great deal of work on this neurological condition. His cases had been treated with alcohol injections and avulsions, and even resections of the Gasserian ganglion, and had finally been relieved by resection of the superior cervical ganglion of the sympathetic. It was not an operation to be desired if it could be avoided, because of its atrophic effect upon the face, eyes, and various other tissues.

Laryngectomy and Resection of the Upper End of the Esophagus. DR. JOHN E. MACKENTY.

The patient presented is a male adult, age 46. Cancer of the larynx and esophagus. The growth involved the posterior part of the larynx on both sides, extending about three-quarters of the way around the mouth of the esophagus. The larynx was removed with the esophagus as far down as the opening into the thorax. The operation was done on July 16.

So far there has been no recurrence, but this would undoubtedly occur. It seemed better to remove the esophagus than to do a gastrostomy, which would surely have been required in a short time. The man's condition was good and he had gained weight since the operation.

In esophageal cancer, pains in the region of the ears and over the top of the head are generally present. In this case they were so severe as to require morphine. Since the operation this symptom has not been complained of.

Vincent's Angina. Dr. Joseph H. Abraham.

The patient was a young man who had no family history of syphilis or any malignant growth, but gives the following history. He had the usual diseases of childhood. At the age of seven he had scarlet fever, at ten an attack of inflammatory rheumatism lasting three days, at twelve another attack and at the age of fourteen years an attack lasting four months. He also had nervous prostration at sixteen. On September 25, 1914, he had an attack of tonsillitis, lasting two weeks, followed by quinsy and sore throat lasting three weeks. Then an attack of rheumatism lasting one week and another lasting two weeks. On December 28, the patient had sore throat and developed a diphtheritic ulcer on January 8. The throat cleared up by January 29 and he recovered very slowly. In September, 1915, he had his tonsils removed, and in January, 1916, an attack of pneumonia lasting three weeks. In July, 1916, the patient noticed three canker sores. He consulted Dr. Smith, of Jeanett, Pa., who treated him with silver nitrate sticks and the throat cleared up in five days.

On September 4, 1916, the patient noticed three small canker sores, one on both sides of the tongue and one on left cheek; he used a gargle and the sores did not respond to this treatment. On September 8, the patient consulted Dr. Mulholland, who treated him for several days. He had very little pain at this time and no swelling, only slight difficulty in swallowing. The sores on the right side of the cheek and tongue disappeared under the doctor's treatment, but at the end of twelve days the sore on the left side of the tongue began to increase in size. The patient was unable to sleep at night. He was referred to Dr. Stammers, who examined the patient and gave a mouth wash. On September 21, he was referred to Dr. Grausman. The patient first noticed a foul-smelling discharge from the sore about September 20. About September 22, Dr. Grausman asked Dr. Abraham to see the case and on looking at the patient the speaker was suspicious immediately of Vincent's angina. They thought it was a case of actinomycosis and Dr. Kalisky pronounced it so at the laboratory of Mount Sinai Hospital, but also stated he found the fusiform and spirillae. Dr. Abraham did not agree with that diagnosis and had some slides sent to Dr. Jeffries, who examined them and reported the pure culture of fusiform and spirillae. The speaker began treatment on the patient, treating him as an outdoor case, but he seemed to get along so poorly, the suffering was intense and there was a rise in temperature. He was put in the Polyclinic Hospital on September 25. The patient then had a large ulcer on the left side of the tongue, about one and one-quarter inches in circumference. A considerable portion was eaten away and the ulcer extended below the tongue and down the neck. There was a foul smelling discharge when he passed a cotton-tipped applicator down into the neck. The glands were swollen up enormously on the left side. The patient could hardly open his mouth, the ulcer also involved the remains of the left tonsil and anterior faucial pillar, then to the periosteum covering the lower jaw to the extent of the last two molar teeth, on the inner surface and exposed the bone from the last molar along the anterior border the ramus; passing the inferior maxillae it skipped to the upper jaw, denuding it of the periosteum posterior and above the last molar. The temperature was 103 degrees.

When Dr. Abrahams first saw the case he noted the peculiar odor. He said that one familiar with it could hardly mistake it from the odor of necrosis, syphilis or any other disease. Smears were taken during treatment and after the first treatment in the hospital, the number of bacteria seemed to decrease markedly after each treatment. They had it under control in about four or five days and kept the patient in the hospital until October 10th, before he was allowed to leave healed. The patient was fed with a tube every three hours through the nose and allowed no food by mouth.

The treatment consisted in the application of pure carbolic acid used on a cotton-tipped applicator. When dealing with marked necrosis it was imperative that the necrotic area be removed with curved scissors so the acid could penetrate, prying the mouth open with some form of opener, while the nurse holds it. The necrotic periosteum was hanging in shreds. The applicator was pressed into the ulcerated area until the carbolic acid ran over the surface, which was allowed to remain there for one minute and then was neutralized with alcohol. It had been impossible to make all the applications at once as he had to let the patient wash out the saliva. He protected the whole side of the face with vaseline. After the first application there was slight pain, but after that there was anesthesia, the applications being made without cocain. He sent the patient down to Dr. Hasbrook, who removed the last molar tooth, which was entirely denuded of the periosteum and asked him if the bone there was free to also take it out. A sequestrum was removed, which Dr. Abraham presented to the section.

DISCUSSION.

Dr. Hubert Arrowsmith said he did not see exactly why Dr. Abraham used such an agent as carbolic acid. The result was excellent, but he had never seen a case which did not respond quickly to the local application of salvarsan—a five per cent solution in glycerine. It is rapidly efficacious in every instance, and is much less disagreeable and painful to the patient. In earlier days these cases had been treated with very indiffrent success by the tri-chlor-acetic acid, methylene blue, nitrate of silver and other agents. When we have in salvarsan a certain and not unpleasant specific, why search further?

Dr. Francis J. Quinlan said it seemed to him that there was always some allied condition in Vincent's angina and syphilis like lupus and tuberculosis. He did not know about discussing this relation, but as Dr. Arrowsmith had said, salvarsan cleared these cases up. In regard to putting this man through the torture he underwent, it seemed to the speaker, in the present light of progressive medicine, that we ought to anticipate such heroic measures. Carbolic acid was a severe measure, with its sloughing, and the cicatrices which were found in this patient. It seemed to him in a case of this severity, with such ulceration and sloughing, that something more than a local agent would be justifiable, although salvarsan locally seemed to clear up these conditions.

Dr. Joseph H. Abraham said he was familiar with the salvarsan treatment for several years but had not used it because it was so expensive and everyone had carbolic acid, and furthermore, carbolic acid has proved a specific in his hands. In many cases two applications, one a. m. and one p. m., were sufficient. They must find the fusiform bacillus and spirillae in these cases. In the cases treated there had been slight pain for the first second, but after that anesthesia. In cases localized over the tonsil alone he referred his cases to the pathologist first for examination. If Vincent's was present, the acid treatment was applied immediately. He cleaned out the tonsils, using two applications every twenty-four hours. After every application in the morning he sent the patient back to the pathologist and if he did not find any more fusiform bacilli, the speaker considered the case cured. He did not doubt that salvarsan cured these cases, but if they were cured by a simple remedy, as carbolic, in so short a time, he was in favor of it because every physician had carbolic acid, and in his hands it has proven a specific.

Dr. MacKenty said that salvarsan gave such good results that the application of pure carbolic acid as outlined by Dr. Abraham did not seem justifiable. He felt that the contraction observed in this case might be due to the treatment.

Dr. Joseph H. Abraham said that he was surprised at the criticisms of Dr. MacKenty, especially after so full a report of the history had been given, and that it had been distinctly stated that the patient was under the care of various physicians, all of whom had made various applications to the ulcerated area. When he saw the patient, the periosteum was denuded on the inner surface of the lower jaw in the region extending from the last two molar teeth backward and upward along the anterior border of the ramus of the lower jaw, exposing the bone. Also, the periosteum covering the last molar of the upper jaw was necrosed and bone was exposed. With such an extensive ulcer of the periosteum covering so large an area, the patient was bound to have a slight stenosis. In the healing process following such an extensive necrotic area, scar tissue was bound to follow, and the slight stenosis that is present is due to the large amount of cicatricial tissue. This was bound to follow if the acid had not been applied. Therefore, he could not agree with the Doctor that the acid was the cause of the stenosis, but rather that the pathological changes and Nature's method of healing was the direct cause.

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ORIGINAL COMMUNICATIONS.

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REPORT OF CASE OF BILATERAL, CONGENITAL, OSSEOUS ATRESIA OF THE EXTERNAL AUDITORY CANAL, WITH AN EXCEPTIONALLY GOOD FUNCTIONAL RESULT FOLLOWING OPERATION.*

DR. L. W. DEAN and DR. T. R. GITTINS, Iowa City, Iowa.

Occurrence: According to Bezold and Siebenmann[1] this condition occurs once in every 2,000 cases, and one out of every six cases is bilateral.

In 1909, Forsyth[2] made the statement that but two cases had been reported of bilateral atresia in which there was hearing and understanding of speech.

T. K. Francis,[3] in 1910, reported one case of unilateral osseous atresia in 10,000 cases examined.

Pomeroy,[4] in his book, "Diseases of the Ear," 1886, makes no mention of congenital osseous atresia of the ear canal. Likewise, Politzer's[5] work, translated by Sir Wm. Dalby in 1894, refers only to acquired atresia, not even noting a congenital form.

Pathology: The pathological picture of a typical case of congenital osseous atresia as described by Bezold and Siebenmann,[1] is as follows:

"A small, irregularly formed rudiment of cartilage which is covered with skin, is on the outside in place of the auricle. There is no entrance into the meatus. The mastoid process usually starts directly behind the glenoid process of the lower jaw. Usually, there are rudiments of two ossicles and no drumhead is present. The antrum of the mastoid is most often quite well developed."

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*Read before the Middle Section of the American Laryngological, Rhinological and Otological Society, at Columbus, Ohio, Feb. 26, 1917.

These writers give an account of the work of Joel[6] in 1894, at which time he compiled records from cases at post-mortem. He found aplasia of the tympanum and also the drum-membrane. The labyrinth and its windows, together with the stapes, were nearly always found intact. In almost all of the cases, the osseous portion of the canal was represented by a mass of compact or cancellous tissue; occasionally a small defect in the bone could be observed, or occasionally a narrow fissure leading to the tympanum. Usually the tympanum was narrowed or replaced, while the Eustachian tube was sometimes abnormally wide.

There has been much discussion as to the probable pathology in atresia. Some writers base their arguments on clinical observations, others on their studies of the embryological development of the ear. One group claims that when the meatus is deformed, that is, congenitally occluded with bone, the internal ear is also affected; the other group holds that the external ear can be and usually is deformed without the inner ear being affected.

The work of Page,[7] in 1914, presents the most complete review of this subject.

Giving Politzer and Kerrison as his authorities, he says that the bone meatus is not associated with the development of the essential organ of hearing. The greater part of the tympanum itself, including the osseous portion of the Eustachian tube, except a small part of the anterior tympanic wall and roof, develops with the essential organ of hearing in the petromastoid portion, and is not associated with the development of the meatus and auricle in any way. He goes on to say that according to Politzer, the stapes develops from the labyrinthine capsule and a ring-shaped deposit situated laterally to the labyrinthine capsule, thus explaining the fact that the stapes is rarely found missing in these atresia cases, while the other ossicles may be absent.

On the authority of Cassels,[8] writing in the *Glasgow Medical Journal,* in 1876, Page says: "Even in cases where there is total absence of the Eustachian tube, accompanied by absence of an external auditory meatus and tympanic cavity, a normal labyrinth will usually be found, and in all probability a stapes."

Quoting Alexander,[9] he says: "Conclusions were reached after many autopsies by this writer, that in the vast majority of cases a deformity of the ear was limited to either the conducting apparatus or the perceiving apparatus alone."

Page[7] also quotes Costex and Berruyer, who in turn credit

Alexander with the observation that a malformation of the labyrinth always affects the facial nerve and auditory nerve at the same time, and that one may conclude from this that all malformations of the external ear coexistent with facial paralysis, indicate alteration in the labyrinth.

In concluding his discussion, Page gives as his own opinion that it can definitely be stated that cases of defective development of the internal ear are rarely, if ever, found associated with atresia of the external ear in otherwise well-developed infants.

The development of the ear as given by Dr. Prentiss, head of the Department of Anatomy, University of Iowa, agrees with the above conclusions. He describes the middle ear as an uppushing of the first visceral cleft, the malleus and incus as formed from the upper extremity of Meckel's cartilage. The external auditory canal and drumhead are evidence of the inpushing of ectoderm from without, the uppushing of entoderm from within and the overgrowth outward of the skull to accommodate the growth of the brain. The internal ear he describes as derived from the otic vesicle, which pushes in from the ectoderm, then becomes entirely separated from the exterior.

The following represents opinions contrary to these just expressed:

1. S. J. Kopetzky[10] makes the statement that the graver forms of atresia are usually associated with maldevelopment of the middle and internal ears, it being rare to find a well-developed concha. He gives as his authority Link, Jacobson, Blau, L. Wolff and Brieger. He also quotes Schwartze as saying that invariably with grave one-sided atresia, a maldeveloped labyrinth also exists on the affected side, and substantiates his observations by the fact that a test fork on the middle of the top of the head is heard only in the normal ear.

2. F. A. Forsyth[2] states, that congenital atresia is usually associated with malformation of the auricle and in most cases with malformation of the middle and internal ear.

Prognosis: In going over the literature on this subject, one is forcibly impressed that the general trend of opinion of the best men has been and still is against operative interference.

Dench[11] discourages any operative work in osseous atresia cases, saying that results do not warrant attempt at interference.

T. Mark Hovell[12] says that prognosis is bad because of the chance of trouble in the inner ear. He advises against interference in unilateral cases and considers no operation is practicable in cases where an osseous mass occupies the place of the external auditory meatus.

Kopetzky[10] states that results of operation are usually bad if functionating apparatus seems to be at all affected.

W. A. Phillips[13] gives as his opinion that congenital atresia of the extended auditory canal should be let alone because of the bad results.

J. C. Beck[14] says not to operate for the same reason.

Ballenger[15] advises against operative interference in these cases.

Andrews[16] gives a fair prognosis based on a case in which the mastoid route was taken and hearing was somewhat improved.

Hershel[17] says that prognosis is very bad, basing his opinion on one case of his own and four cases which he found in the literature.

Bishop,[18] in discussing imperforate auditory canals where there is osseous occlusion, advises against operation and states that the best authorities were at this time against operative interference unless there was only a thin bony septum. He mentions that Politzer advised against operation unless this condition were present.

Milligan[19] advises only to operate when one can palpate the annulus and can demonstrate a passage of air to the middle ear through the Eustachian tube.

Page[7] in his work of 1914 is practically the only writer who gives at all a favorable prognosis in these osseous atresia cases. He says that "operation is warranted in practically every case of bilateral congenital microtia with total osseous atresia which occurs in an otherwise well-formed infant." In his writing he gives the following as the most prevalent reasons given as a basis of non-interference:

1. That where the external auditory canal is deformed and the meatus congenitally occluded, there invariably exists such extensive defect either in the conducting mechanism, or in the perceptive apparatus, or both, that operation is unwarranted.

As an argument against this theory, he refers to the developmental facts and post-mortem findings referred to in this paper under the discussion of the pathology.

2. That the operation should not be performed unless tuning forks and bone conduction tests are found to indicate a functionating mechanism.

3. That it is practically impossible to prevent closure of an artificial canal after it has been made.

This last reason he disposes of by referring to the method of doing a mastoidectomy, then skin-grafting the cavity, as was done in his case.

Treatment: The following operations I have found described:

1. Bezold and Siebenmann,[1] in 1908, describe an operation suggested and tried by Schriebe. This operator opened into the antrum from the mastoid, made a wide canal by lining the mastoid cavity with Thiersch grafts.

2. Kopetzky,[10] in 1908, cites an operation of Jaeger, in which the mastoid was opened down to the antrum and then left open posteriorly, thus allowing sound waves to reach the middle ear through the mastoid cavity and aditus.

3. Andrews[16] gives record of a case operated upon by the mastoid route. Skin flaps were made and turned down into the wound.

4. Hershel[17] suggests a radical mastoid operation, but indicates a bad prognosis.

5. Dench,[11] in 1900, describes an operation in which the canal is made in the usual site, then kept open by means of a rubber or metal tube until cicatrization takes place.

6. Alexander,[9] in 1908, gives the history of one case in which a mastoidectomy was done, and skin flaps were made from the posterior part of the wound. The meatus thus formed was packed.

7. Dual[20] describes a case in which both mastoids were opened and the cells cleaned out. Skin grafts were used in the wounds to form the meatus, but without result as the wounds were closed, with no improvement in hearing.

8. Beren's[21] case. This case, operated by Beren, was described by Dual. A radical mastoid operation was done on each side, then the cavity was dermatized with flaps.

9. Page.[7] The mastoid cavity was opened, and the cells cleaned out down to the tympanum. An opening was made in the auricle, then the mastoid incision was closed. Ten days later a skin graft in the mastoid wound, through the artificial meatus, was made.

Reports of cases:

1. Alexander's case:[9] Reported by Page.[7]

This was a case of a boy eleven years of age, with a normal left ear and congenital microtia with total bony atresia in the right. Operation was performed for mastoiditis.

He found the absence of a bony canal, pus in the mastoid cells and ossicles present. The drumhead was absent, a bony plate being in its place.

The operation was completed by tucking in skin flaps from the posterior part of the wound. The meatus thus formed was packed. Eight months after the operation, the meatus was 4 mm. wide.

As a result, he gives an improvement in hearing, from 1 meter through a tube before operation, to 4 or 5 meters after operation.

2. Blumenthal's case:[22] Mention was made of two cases in which results of operation were very unsatisfactory. This writer argues against operation, saying that one should keep what hearing was already present.

3. Dual's case:[20] This case was a girl twelve years of age, with a bilateral total osseous occlusion of the ear canals.

Both mastoids were operated, then skin-grafts were applied in the wounds. The wounds failed to keep open and there was no improvement in hearing.

4. Dahmer's case:[23] In this instance the patient was three years old and had a bilateral osseous atresia.

Operation was performed on each side a bony canal being made to the tympanum. Drumheads were not present. The stapes was present on each side.

The author reports that the hearing was much improved.

5. Morris' case:[24] This was a case of a boy ten years of age, with a bilateral bony atresia. The patient could hear loud voice. The mastoids were opened. The author does not give results nor describe operation.

6. Braun's case:[7] Page reports this case, saying it was unpublished at the time of his work.

The findings at operation were that the jaw encroached on the line of the canal, annulus was present, but no drumhead was found. Ossicles were found in a practically normal tympanum.

The author gives as a result a marked improvement in hearing.

7. Cheatles' case:[25] This author reports a case of congenital malformation of the auricle and meatus, with unilateral osseous atresia. There was a fairly well-formed auricle without a meatus opening. Some hearing was present and vestibular reactions were positive. The x-ray picture showed mastoid cells and middle ear tract. The jaw appeared to articulate with the posterior meatal wall.

At the time of the operation no mastoid cells and no tympanic plate was found. After finding no meatus, the operator stopped.

8. Beren's case:[7] This case was reported by Page, who said that up to the time of his work it had not been reported.

The patient was five years of age. He had a bilateral osseous atresia of the ear canals. Both sides showed articulation of the jaw with the anterior wall of the mastoid.

A radical mastoid operation was done on each side. No drumheads were found. On one side a rudimentary malleus and incus were found: on the other, a rudimentary malleus, while the stapes was present on each side.

The mastoid cavity was dermatized with skin flaps.

A good result was reported.

9. Hershel's case:[17] In 1909 this writer reports a case of congenital atresia of the auditory meatus in which the auricle was normally developed.

The patient, an old lady, was the offspring of blood-relations. The hearing was 10 cm. for whispered voice.

The meatus was found occluded by a plate of bone. The Eustachian tube was found to be patent.

On post-mortem (no operation was performed) no drum membrane was present.

10. Page's case:[7] The patient was two years of age, with a bilateral osseous atresia.

One ear was operated at this time. The mastoid was opened (mucopurulent material found). The antrum was located, small aditus and contracted middle ear were exposed.

There was no fibrous canal, drumhead or annulus found. likewise no ossicles. The Eustachian tube was open.

An opening was made in the auricle, then the posterior incision was closed. After ten days' time, a skin graft was done. Caloric test was positive.

Two years later the meatus was 5 mm. in diameter, the cavity was clean and the hearing was improved.

Later the other ear was operated. No meatus or bony canal was found, likewise no ossicles. An indefinite drumhead and poorly-formed malleus were present, while the incus was quite well-formed. The stapes was present, as was afterwards demonstrated.

An artificial meatus was formed, then Thiersch grafts were applied ten days later.

Caloric test was positive.

Three years after the first operation, the mother of the patient says child can hear natural tone of voice.

After a study of his case and those reported in the literature. Page[7] makes the following conclusions:

1. Operation is warranted in practically every case of bilateral congenital microtia with total osseous atresia which occurs in an otherwise well-formed infant.

2. After a child with this deformity has reached two years of age, x-rays should be taken, then the mastoid opened. If a drumhead is not found, the contents of the tympanum, with the exception of the stapes, should be removed.

3. Injury to the jaw can be avoided by keeping well posteriorly.

4. It is best to allow a large cavity, then line it with skin grafts.

5. The operation should be done early, to allow the development of speech.

Author's case: Patient, L. McC. Male. Age 15. White.

The patient came to the University Hospital, June 21, 1916, complaining of poor hearing.

The patient's hearing had been poor since birth. When two years of age he began learning to talk.

The patient says his hearing has been failing more rapidly during the past year. There is some tinnitus at times. He says he hears best when on a train or anywhere where there are loud noises. There has been some dizziness at times, never marked. At one time such a dizzy spell was associated with staggering and vomiting. This was about six years ago.

The patient is in the seventh grade; has always seemed quite backward. Parents think he does not talk as plainly as he should.

The child was born at full-term, after a normal labor. He is the third child in a family of nine. There are no other deformities in the family. There are no children dead. There is no history of miscarriages. No history of consanguinity can be obtained. Patient has had measles and mumps; has not had scarlet fever or diphtheria.

Examination—Ears: Right Ear. Auricle appears normal in size and position. Where the external meatus should be is a concavity 3 mm. deep. Probing shows it to be bone covered with skin.

Hearing with alarm, forced. Whispered voice, three inches. Spoken voice, five feet.

Hearing without alarm. Same.

Rinne. Negative. Bone conduction slightly less than normal. Air conductions much cut down.

Weber's test. Localizes to the left.

Low notes are markedly cut down. Hears C 1 fork only at marked intensity.

High notes are cut down, but are heard better than lower ones. Hears C 4 fork at high intensity.

Left ear: The left ear is similar to the right, except that the external auditory canal extends inward about one-half cm. Probe again comes against epidermis, covering over what is apparently solid bone.

Hearing with alarm. Forced whispered voice, two inches. Spoken voice, three feet.

Vestibular test.

1. Rotation test. Patient was rotated from left to right ten turns in twenty seconds. Nystagmus, almost wholly horizontal in type was present on looking to the left, and lasted thirty-five seconds.

After rotating from right to left, nystagmus was present on looking to the right for forty seconds. Patient became quite nauseated and vomited profusely ten minutes after completion of the rotation tests.

2. Caloric test. Water at 68 degrees was applied to each remnant of ear canal for six minutes. No nystagmus, vertigo or nausea resulted. Ice water was applied in the same way for six minutes. No nystagmus, vertigo or nausea resulted.

Nasopharynx. Orifice of each Eustachian tube appeared smaller than normal, but appeared to be patent. The tissues surrounding the orifice appeared to be atrophied.

Wassermann on blood is negative.

X-rays of mastoids. Mastoid cells on both sides apparently normal.

An area is made out in each plate, which is apparently tympanic cavity.

On June 26, 1916, the left ear was operated upon with the hope of establishing a meatus, the supposition being that the perceiving apparatus was intact and functionating.

Operation. The left mastoid was opened and a simple mastoidectomy was done in the usual manner. Cells seemed to be normal. The antrum of the mastoid was found, aditus was approached and enlarged until the incus was well exposed. The incus appeared normal and movable.

Taking the floor of the aditus as a guide for the facial, the bone external to the tympanic cavity was attacked. Solid bone about one-third the thickness of a normal canal, was found between the mastoid cells and glenoid fossa. This was removed, with the burr working outwards to the concave area representing the external meatus. No annulus could be detected. Just external to the proper position for the annulus, a small cavity 3 mm. in diameter, was found. This communicated with the tympanic cavity by means of a very small opening into which a mastoid seeker fitted tightly. No evidence of a drum head was to be seen. A seeker introduced from without into this aperture caused a movement of the incus. The external wall of the tympanum was so constricted in the antero-posterior direction that it was not considered advisable to attempt the enlargement of this opening. The solid bone was removed externally to the concave depression in the concha. A large opening was made in the concha. The mastoid cavity was lined with Thiersch grafts, and the wound closed posteriorly. The grafts were held with the usual cotton pledgets, dipped in aristole powder, the last of the packing being done through the opening in the concha.

This operation resembled a meato-mastoid operation with primary skin-graft.

On the third day following the operation, the cotton pledgets were removed. There was practically no odor, graft seemed to be holding perfectly. There was no pus and a very small amount of discharge. A light iodosal drain was put in the wound very loosely.

Facial, all right.

July 1, 1916. Graft holding very well. Practically no odor. Dressing just moistened with discharge. Hearing without alarm, whispered voice, twelve feet: spoken voice, forty-five feet.

July 6, 1916. Graft has held best in the region of the aditus. There has been a small amount of discharge each day. Apparently no pus.

July 16, 1916. Most of the superficial epidermis of the graft has sloughed. Holding well in the region of the aditus, slight bulging posteriorly. Pack of loose gauze saturated with discharge. No bad odor. Hearing with alarm, whispered voice, three feet: spoken voice, nine feet. Hearing without alarm, whispered voice, ten feet: spoken voice, forty feet.

July 21, 1916. Graft continues to look fine. There is quite a free discharge. The hearing is the same as on July 16, 1916.

August 10, 1916. The wound is covered with healthy looking epidermis, except in one small area posteriorly. The hearing is the same as on July 16, 1916.

August 26, 1916. The wound has been gradually healing and the discharge has almost ceased. There is a smooth epidermal layer over the region of the aditus. Hearing with alarm, whispered voice, three feet; spoken voice, ten feet. Hearing without alarm, whispered voice, twelve feet; spoken voice, forty-eight feet.

The canal is about 1 cm. in diameter at the smallest place.

Spetember 3, 1916. The right ear was operated. A simple mastoidectomy was performed. All of the cells were removed. The antrum was entered, and the aditus exposed. The horizontal semicircular canal and long process of the incus were exposed. The incus was movable, but was not nearly so free as it should be. It seemed somewhat deformed and fixed at the lower joint.

No trace of any cavity external to the position of the annulus on this side was discovered. A thick wall of bone between the mastoid cells and the glenoid fossa was reamed out, using the burr. The soft tissues of the fossa were accidently exposed. From this there was no disturbance in the temporomandibular articulation at any time. No annulus or drumhead was seen. The bone external to the tympanum was not removed.

The lateral sinus and dura in the middle fossa were exposed and so primary skin-grafting was not attempted.

Just internal to the concave depression representing to us the position of the external auditory meatus was a little cartilage. This did not penetrate the bone, but fused with the tissues of the glenoid fossa.

An opening was made in the concha, the posterior wound closed, and the mastoid packed through the opening in the concha.

The facial was all right after the patient regained consciousness.

September 7, 1916. The dressings were removed. Hearing with alarm, right ear, whispered voice, two feet; spoken voice, eight feet. Hearing without alarm, left ear, whispered voice, fifteen feet; spoken voice, forty-eight feet.

September 15, 1916. The wound is granulating nicely. Hearing with alarm, right ear, whispered voice, two and one-half feet; spoken voice, nine feet. Hearing without alarm, left ear, whispered voice, eighteen feet; spoken voice, fifty-four feet.

September 20, 1916. The wound on the right side is still open posteriorly. This is being packed daily.

A light pack is placed in the left ear each day. A small area near the external meatus has not epidermized as yet.

September 22, 1916. The wound on the right side was grafted to-day. The original mastoid incision was opened throughout its extent again, exuberant granulations were curetted, Thiersch graft from the leg was placed in the wound, covering over smoothly the region of the aditus. The wound was closed posteriorly and cotton pledgets packed in through the meatus to hold the graft in position. The facial was all right after the patient regained consciousness.

September 26, 1916. The cotton pledgets were removed. The graft appears clean and white. A plain linen pack was put in loosely. No bad odor. There is quite a free discharge.

October 1, 1916. The dressings in each ear are being changed daily. The graft in the right ear is holding very well. There is a small amount of discharge on the pack each day.

The meatus in each ear is about 1 cm. in diameter.

October 5, 1916. On this date the left ear, which was operated first, presents a meatal opening of from 8 to 10 mm. in diameter. The canal from the meatus down to the region of the aditus is considerably larger in diameter and covered with healthy looking epidermis, except for one small area posteriorly. The graft in the right ear is holding very well. There is less discharge each day and the meatus is about 10 mm. in diameter.

A review of the literature has brought out no case with such improvement in hearing and satisfactory meatal opening and canal as has this case. The case reported by Page is the best result so far reported and the improvement in this instance in the hearing was not accurately determined so that no definite statement could be made.

The findings on February 1, 1917: Seven months after the operation on the left mastoid the hearing in the left ear was, whispered voice, forty feet, without alarm. The right ear was not tested because of an acute middle ear otitis which was present at this time. A few days before the membrane covering the aditus bulged and ruptured. Now there is a suppurative discharge from its perforation.

Examination of the left ear: The external meatus is 1 cm. in diameter. The mastoid cavity is completely covered with white, dry skin. There is nothing that looks like an external canal. At the bottom of this cavity the aditus cannot be seen. The site of the aditus is a perfectly smooth, concave wall. The small space external to the annulus mentioned in the early description has been filled in and disappeared. The external wall of the tympanum cannot be seen as such. The aditus is closed over by what seems to be a tough fibrous membrane, which is undoubtedly acting as a tympanic membrane.

Examination of the right ear: Four weeks ago this ear was seen. At that time the interior of the ear was the same as the left. The hearing in the right ear was not so good as the left.

A peculiar thing in connection with this case in testing the hearing has always been the way in which the hearing was cut down by using the alarm apparatus. This has always interfered with the testing of the exact amount of hearing in the poor ear.

About two weeks ago the patient complained of an earache in the right ear. On examination this fibrous membrane and skin covering the aditus in the right ear was found to be bulging. The next day the bulging skin ruptured, and up to the time of examination, February 2, there has been a suppurative discharge from the tympanum. The membrane covering it is perforated and looks very much like a perforated normal tympanum.

Our expectation is that with treatment of the suppurative middle ear otitis this membrane covering the aditus will heal the same as the tympanic membrane does.

At this time the discharge from the right ear has ceased and the membrane covering the aditus has healed in a manner similar to the healing of a perforated drumhead.

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ON LUNG ABSCESS AS A SEQUEL TO TONSILLECTOMY.*

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The consideration of those elements which add hazard to our daily routine, any analysis of the dangers through which our patients are lead in even very ordinary procedures, is always importantly *apropos*. The necessity of such consideration is not lessened by the comparative rarity of any type of complications or sequellae: the very nature of our calling demands a constant attention to all details which tend, however rarely or remotely, to prevent catastrophes in any branches of our field. The inability of preventive medicine to cope with more than a relatively few problems of our time strongly emphasizes the surgeon's responsibility in the prevention, when it is in his power, of what may prove to be serious or even fatal complications following operative work.

I shall refer in this communication to the occurrence of lung abscess following the removal of tonsils, two instances of which were recently brought to my attention. These two cases are admirable, though pitiful, examples of what can be produced and what can probably be averted in the routine technique of tonsillectomy. The months of pain and utter misery, the constant shadow of impending death, the evolution of living skin-covered skeletons from healthy and normal individuals as shown in both cases,—these concepts are indelibly written in my memory and are responsible for my present effort to provoke discussion.

The possibility of such terrifying sequellae to the most popular of modern surgical operations is certainly worthy of profound thought, and when one considers the anatomy involved, the nature of the operation and the stupendous number of operations performed day after day by specialists, surgeons, general practitioners, and students, it would seem that it is only by the grace of God that grave complications follow tonsil operations as infrequently as they do.

We are indeed most fortunate in this infrequency, and that many of us escape familiarity with it. There are many men performing large numbers of tonsillectomies year after year who have never seen a case thus complicated, and there are very few of them reported in the literature,—yet a study of the composite experience of a large group of men reveals facts of sufficient importance to awaken sincere interest in anyone performing the operation.

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Bassim, in France, reported in 1913, nineteen cases of bronchopulmonary complications following tonsillectomies, of which two were lung abscesses. In sixteen cases reported by Scudder during a period of eight years at the Massachusetts General Hospital, one followed a septum resection, and, to use the writer's own words, "several followed tonsillectomies." Yankauer has mentioned four cases in his experience. The report of Manges, recently published, emphasizes keenly the possible frequence of this much-to-be-dreaded complication: there are nine cases in his series, six of which occurred in a period of six months at Mt. Sinai Hospital. The x-ray department of this institution reports that 20 per cent of all lung abscesses examined by them are post-tonsillectomy in origin.

A search through the records of the Michael Reese Hospital Library covering a period of ten years shows that in this time thirty-seven diagnoses of lung abscess were made, three of which appeared a short time after tonsil operations under general anesthesia. Two of these three cases were in the hospital at the same time, and I was fortunate to have the privileges of a consultant in both. The third case occurred some time ago, and I am indebted to my colleagues at the hospital for permission to mention it.

A marked similarity will be noted in the following histories, which is fairly typical of all the reported cases:

Case 1: S. S., a Russian male, twenty-two years of age, was admitted, complaining of chest pains, cough, profuse foetid sputum, and a marked progressive loss in weight and strength. The onset of his trouble, he stated, occurred five days after the removal of his tonsils under ether anesthesia, six weeks previous to his admission. He had been very miserable after the operation, and bled intermittently for twenty-four hours. His discomfort culminated on the fifth day with the symptoms of his present complaint. He described the pain as dull, pulling, in character, over the left chest and back of the left shoulder. The pain at times was very severe, and was relieved when at its worst by paroxysms of coughing which produced large quantities of thick, greenish-yellow pus. The sputum was occasionally blood tinged, and at all times had an extremely offensive odor. His personal and family history were negative as far as points bearing on his present complaint were concerned.

He entered the hospital with a temperature of 105, pulse 132, respirations 28, and appeared seriously ill. On examination of the fauces, the scars of a recent tonsillectomy were apparent. There was a large piece of tonsil tissue high on the left posterior pillar. Both anterior pillars were amputated, and the uvula hung on the right side of the midline. Chest examination showed dullness and large moist râles posteriorly on the left chest in an area extending from the third to the seventh ribs, and from a line drawn through the center of the scapula to the paravertebral line. X-rays, by plate and flouroscopic methods, revealed a shadow, oval in outline, corresponding to this area of dullness.

The abscess was opened and drained, following which the patient made a protracted, but uneventful recovery.

Case 2: H. P., a Russian male, married, twenty-seven years of age, was admitted, complaining of continuous and at times excruciating pain in the right chest, together with chills, fever, night-sweats, and spells of intense coughing, with the production of large quantities of thick, greenish, foul-smelling sputum. He stated that fourteen days previous his tonsils had been removed under a general anesthetic. Nine days following the operation, during which time he suffered with malaise, a slight cough, and a gradually increasing pain in the right chest, he was suddenly attacked with a paroxysm of coughing and gagging, and expectorated an immense quantity of thick, green sputum. Two days later a similar attack occurred. He said he had experienced chills every night for a week, following which his temperature frequently reached 104. In this condition he presented himself at the hospital.

Under examination the pillars of the fauces showed irregular scars of the recent operation, covering masses of tonsillar tissue on both sides. Both pillars had been torn and partly removed. The left lung was negative. Expansion was impaired on the right side, and diminution of resonance with reduced tactile fremitus and breath sounds, was noted in the right inter-scapular region. There was dullness over the lower right lobe posteriorly, with many moist rales in this area. Here the tactile fremitus was diminished and the vocal fremitus increased. Between the two areas of dullness was a belt of hyper-resonance with increased tactile fremitus and numerous small, moist rales. By flouroscopic x-ray examination an abscess was located casting a large and definite shadow in the right lower lobe.

The patient remained in the hospital for four weeks, during which time he ran a constant temperature varying between 102 and 104.6.

with frequent attacks of coughing, producing large amounts of fetid sputum. He was treated medically during this time, and when it was found advisable to secure surgical intervention, the patient left the institution to be operated on by the surgeon of his choice. The abscess was subsequently opened and drained, and he is now spending the greater part of a year in the South, in an effort to regain his former strength and health.

Case 3: D. B., a Polish male, single, twenty-three years of age, was admitted to the hospital complaining of sharp spasmodic pain in the right chest, a severe cough with intensely malodorous sputum, and a variable fever with frequent chilly sensations. He stated that three weeks previous his tonsils had been removed under ether anesthesia, after which he had been confined to bed because of a continuous though moderate hemorrhage. He began to cough eight days after the operation, and within twenty-four hours began producing, at intervals, large quantities of fetid sputum, which relieved to a great extent much of his pain.

He entered with a temperature of 101.4, pulse 120, and respiration 24. Examination of the mouth showed complete removal of the tonsils, and a very apparent amputation of the left pillar, with the uvula retracted to the right side. The chest findings disclosed an area of impaired resonance over the lower right lobe posteriorly, without bronchial breathing or increased tactile fremitus, especially marked at the costal angle. Flouroscopic and stereoscopic x-ray views located an abscess at the level of the cardio-phrenic angle in the lower lobe extending from the fifth to the eighth rib.

With rest and symptomatic treatment the temperature, which reached 103 in the first twenty-four hours, gradually subsided together with the cough and sputum production, and the patient was discharged after five weeks, to begin a long and tedious convalescence.

The histories here presented are given merely to show the marked similarity between them, which is typical also of the cases reported in the literature. They are useless in any determination of the etiology of the complication, since the details of technique and accident cannot be secured from the patient. It was, however, not difficult to determine in two of the above cases that tonsillectomy had been crudely performed and that in consequence of the destruction of faucial tissue there was doubtless aspiration of blood flowing from the injured muscle tissue during narcosis.

The number of cases reported in the literature being remarkably small, considering the possibilities of such an occurrence in the hands of even the best operators, I determined some time ago to find out by personal investigation, if the number of cases published was a correct gauge of the number of such cases actually occurring in the practice of, or coming to the attention of, my colleagues. Realizing that most cases of tonsillectomy are lost track of by the operating laryngologist in routine hospital service, I included in my investigation some internists and surgeons, in whose wards such cases are likely to be found when the patient returns to the hospital with lung symptoms. I therefore addressed a circular letter to fifty internists, surgeons, and laryngologists, selected at random throughout the country. I was in this way informed of at least fifteen additional cases, with hints of many more. These additional cases, informally reported, serve to indicate that more instances of lung abscess complicating tonsillectomy occure than we perhaps individually imagine.

A. S. Warthin, pathologist at the University of Michigan, writes, for example, of *three* autopsy cases on *students* "in which metastatic abscesses of the lungs, and (secondarily) of liver, followed tonsillectomy." He is uncertain as to the anesthetic used, but believes they were all local. He considers them to be examples of metastic infection: post-operative pyemias. The lesions in all three cases, and in a *fourth* student, who very narrowly escaped the autopsy table, were situated in the right lower lobe.

Jacob Geiger, of St. Joseph, Mo., has seen two cases in his experience, neither of which was fatal. One case occurred after local anesthesia, and showed an irregularly scarred operative field. The lesions were both on the right side, one in the upper lobe and one in the lower. Dr. Geiger believes the upper lobe infection to be due to sepsis, and the lower to aspiration.

Lung abscess in a child of one year and nine months, following operation under ether, is reported by Dr. N. L. Wilson, of Elizabeth, N. J., who writes that symptoms began on the third day, with a lesion located in the left lower lobe. The patient made a slow recovery without operation. Dr. Wilson attributes the complication to aspiration.

Dr. James B. Herrick has acted as consultant in a case of lung abscess in a patient thirty-seven years of age, following removal of the tonsils under general anesthetic. The lesion was located in the right lower lobe. Symptoms began on the fifth day. Dr. Herrick suggests that the lesion was embolic in origin but adds that he cannot be certain.

Dr. Henry Christian, writing from the Peter Brent Brigham Hospital, in Boston, reports two cases of lung abscess, both in women, fifteen and twenty-five years of age. They were both operated in outpatient clinics, and it is not known whether general anesthesia was used, though this is highly probable, especially in the younger case. Symptoms were apparent early, and the coughing began on the fifth and seventh days. Of these cases one had a focus in the left upper lobe and the other in the right lower.

During the past year Dr. Frank Billings has seen three patients suffering with lung abscess following tonsillectomies done under ether. All the patients were adults between the ages of twenty-five and thirty-five years. The symptoms in the three cases began practically at once and the lesions were located low on the right side of the chest. The cases were treated surgically and all recovered. Dr. Billings asserts that without doubt these cases were aspiratory.

From the Manhattan Eye, Ear and Throat Hospital clinics, Dr. T. A. McKenty writes: "Cases have been reported which have been done in our hospital. In hospitals such as ours, where from twenty to thirty cases are operated daily, the work is rapid and not sufficient time is taken to control bleeding before the patient is sent back to bed. Aspiration accounts, I believe for the majority of these cases."

Dr. Samuel Robinson, in charge of thoracic surgery at the Mayo Clinic, has seen one case of lung abscess following a tonsillectomy done elsewhere, and is corresponding with two physicians regarding two other cases, neither of which he has as yet seen. The one case operated was thirty years of age, with an abscess in the right upper lobe, symptoms of which began about the second day.

Dr. Manges has had a tenth case added to his series since the publication of his paper in March of last year: an adult of thirty-five years, with symptoms beginning on the tenth day. The abscess was single and located in the right lower lobe.

The mechanism by which pulmonary abscess is produced during or following tonsillectomy is readily apparent. The process is either the result of the aspiration of blood or infected material, or of septic embolism. There are, according to the replies to my circulars, adherents to both theories. Earnest study of the cases brought to my attention, however, convince me that it is impossible to dogmatically state that all lung abscesses are caused by one or the

other process. Manges suggests five possible exciting causes: (1) Anesthesia; (2) aspiration; (3) embolism; (4) special infective agents; (5) local or general antecedent causes (*i. e.,* tuberculosis, diabetes). He lays particular stress on aspiration.

I have personally come to believe that these abscesses may be said to result from post-operative pneumonias of lobar. bronchial, or focal type, which result directly from the anesthetic, from aspiration, or from pulmonary embolism.

Anesthesia, *per se,* may be dismissed with but a word. General anesthetics used in surgery for operations on the body remote from the nose and throat fields practically never produce lung complications more serious than pneumonia.

There are many considerations which make it probable that post-tonsillectomy lung abscesses are directly the result of aspiration. In the first place, let us consider the location of the complicating lesion. A definite majority of reported cases show the abscess to be single, and to be located in the right lung. Most of these, too, are found to be situated in the middle and lower lobes. This naturally supports the aspiration theory, since the offending material would appear to localize in the same positions in the bronchi as foreign bodies of any type. In the second place, the case of aspiration, during the average tonsil operation under ether, of pyogenic and saprophytic organisms expressed from the crypts of diseased tonsils, together with the mess of blood and secretions which is too frequently permitted by the rapid or careless operator, cannot be denied. Thirdly, the fact that the lesions are usually single, favors aspiration, since embolism would lead us to expect more or less showers of infected material to attack numerous portions of the lungs and other organs of the body. Fourth, a curious fact, well authenticated by the cases at hand, is that such cases rarely occur in private practice. In other words, the degree of care which is given to private patients over that given the patients in the wards of the dispensaries and free clinics is as a rule sufficient to give the former protection against this grave complication. Manges is emphatic on this point: "Abscesses of the lungs should never occur if the patient has been properly treated." He refers to the practice of operating twenty or thirty cases in a period of two or three hours, with frequent injury to tissue and consequent hemorrhage, with little care of asepsis, and absolute neglect of the blood-filled mouth of the unconscious patient. The final bit of evidence in favor of the aspiration theory is the number of analagous conditions which certainly cause lung abscess in this way. Cohn's case of lung abscess following the opening of a tonsillar abscess is an example. A case of abscess following the extraction of a tooth, reported by Davies, and a similar case reported by King will also serve.

On the other hand, it is impossible to deny the embolic origin of some of the cases, or at least to deny the possibility of such a mechanism. Brief consideration of the vascular anatomy of the field, and a realization that every tonsillectomy is what may be called, from a surgical point of view, an unclean case, should make us wonder why serious hematogenous complications are so infrequent.

Metastatic pulmonary infection must, when it occurs, follow certain well-defined and easily traced routes. The plexus tonsillaris and plexus pharyngeus,—complicated venous networks, cover the outer walls of the pharynx and tonsil cavities, and receive blood returning from the tonsils, pillars, and lateral pharyngeal walls. These vessels are exposed and always more or less injured in even the gentlest operative work, and this, too, in a field which it is impossible to keep entirely free from germ-carrying saliva and pus.

An infected embolus dislodging from a thrombus in the pharyngeal plexus, is carried through the variable pharyngeal veins into the internal jugular, and through the right heart into the pulmonary system. Here we assume that infection of lung tissue results, either by direct contiguity or infarction, and the usual pathological sequence of abscess formation begins.

Doubtless some lung abscesses must be produced in this way. There are cases known to most of us, and recorded in the literature, of any number of metastatic infections following tonsillectomy, such as mediastinal abscess, endocarditis, brain abscess, purulent joint foci, etc., many of which can be seen at a glance to be hematogenous, and not lymphatic in distribution. Why not then, may embolism be the cause of many lung abscesses, since the blood stream returning from the tonsil site passes through the lungs before visiting again the peripheral vessels?

The diagnosis of aspiration and metastatic infection as the cause of the reported cases, has not, so far as I have been able to find, been differentiated. There is of course little to be said on this subject as the whole matter rests on uncertain theory, but I venture to make a suggestion. It was quite evident to me in studying the material collected for this exposition, that the cases at hand readily divided themselves into two groups when considered from the standpoint of the day of onset of the symptoms. In a great majority of the cases untoward signs and symptoms were noted in the first thirty-six hours. The remaining smaller groups showed, so far as the histories are obtainable, more or less freedom from trouble for periods varying from four days to two weeks. It is not illogical to assume, basing our assumption on well-known facts regarding the period of time required for the pathological processes involved, that the majority of early cases may be due to aspiration, and that the later cases result from septic emboli.

It is quite evident in reading replies to my circular letters, that many operators are aware of the dangers of this complication and have taken steps to eliminate the danger in routine technique. Thus, Seymour Oppenheimer says: "My idea is that it is entirely a question of the operator and his methods, the posture of the patient, and the anesthetic. Anesthesia, in my opinion, in these cases should never be given by any other than a trained assistant who employs a suction apparatus to keep the throat free of blood and secretions. I doubt very much the embolic nature of the lesions."

Similarly, Albert Ochsner writes: "I believe that the reason we do not have lung abscesses following tonsillectomy is due to the fact that we practically never operate under general anesthesia. . . . We never permit our patients to lie on their backs after operation, so as to make the aspiration of blood and mucus difficult."

L. W. Dean explains his freedom from the complication as possibly due to the fact that all his patients taking general anesthetics are "operated on their sides, with the mouth lower than the pharynx, and the buccal cavity lower than the larynx." All adults are operated under local anesthesia in Dr. Dean's clinic.

Dr. Manges believes that the number of lung complications would be materially diminished if the tonsil crypts were emptied of their plugs before operation.

Dr. Robert Levy's practice is to have the patient as nearly horizontal on the table as possible. He uses suction, the assistant sponges thoroughly, and the moment there is any indication of blood in the laryngo-pharynx, the patient's head is lowered.

At the laryngological clinic of the University of Minnesota Medical School, Dr. F. C. Todd uses "the cleft-palate or so-called Rose position for tonsillectomies under narcosis. In this position the head is over the edge of the table, and the blood runs out of the nose and from the roof of the mouth. The patient is not allowed in a level position until his reflexes are restored."

Dr. J. C. Beck believes that the cases reported in the literature are overdrawn and exaggerated, but nevertheless adds that abscess may be prevented by the use of the suction apparatus and the immediate stoppage of all bleeding points during the operation.

The conclusions to be drawn from the experience of many are more to be valued than those of an individual, and so, in closing, I take the liberty of presenting composite deductions from the cases of others as well as my own. This is especially necessary in an exposition of the subject we have discussed, since the relative rarity of the lesion would otherwise detract from its importance.

These deductions, briefly stated, follow:

> Lung abscess may complicate tonsillectomy. The occurrence of this lesion is rare, but it is an ever-present menace to the surgeon, with results so harrowing that every effort must be made to insure, if possible, its prevention.
>
> The great majority of the cases occur after operations done under general anesthetics, in young adults of twenty to thirty-five years.
>
> In the three cases reported by me, examination of the fauces revealed incomplete or destructive operative results. Two of the cases give distinct history of post-operative bleeding.
>
> The majority of the lesions are aspiratory in origin, as evidenced by the location, the ease of aspiration, the occurrence of single abscesses in practically every case, the predominance of the complications in the free clinics and charity hospitals, and, finally, the number of analagous conditions which can cause lung abscess in no other way.
>
> Lung abscesses are the result of pneumonia of lobar, bronchial, or focal type, induced by either the anesthetic, aspiration, or septic embolism. The greater number are doubtless due to the second factor and are therefore largely preventable.
>
> It is apparent that a more general use of local anesthesia for tonsil surgery, with the abolishment of the rapid, tissue-destroying operative methods, and a respectful attitude toward hemorrhage and the secretions of the operative field will do much to relieve the surgeon of serious liability.

104 S. Michigan Ave.

EXTENSIVE CARCINOMATOUS INVOLVEMENT OF THE ACCESSORY SINUSES OF THE NOSE WITH INTRACRANIAL INVASION. CURED FIVE YEARS.

DR. MARGARET A. WARLOW, Philadelphia, Pa.

The following case is of interest because of the apparent hopeless condition of the patient at the time of operation.

Mrs. K., age 59 years, presented herself at my office in November, 1910, complaining of pain in the right side of the face, head, neck and in the right eye. The pain was very severe, being worse at night.

On examination, I found tenderness on pressure over the right maxillary sinus. The right nasal fossa was obstructed by a large inferior turbinal, and a firm mass filled the superior and middle meati. On contracting the tissues, the middle turbinal could not be outlined, and it occurred to me that there was some involvement, probably a gumma, of the antrum of Highmore, pressing the naso-antral wall inward.

Vision was apparently unimpaired. The teeth were in very poor condition.

I suggested to the patient that she go to the hospital for further investigation of the condition. I did not hear from her again until May 1, 1911, when I was called to the house to visit her. I found her very ill and practically insane with pain in the head, which was uninfluenced by large doses of morphin.

From her family I gathered the following history of the case from the time when I had seen her in November:

After leaving me, she had had seven teeth extracted without relief. The pain continued to grow worse and she was treated by her family physician for neuralgia for about three months. In February, 1911, she entered the Methodist Hospital, where she had an operation, evidently on the accessory sinuses. The surgeon in charge of the case informed the family that a second and more extensive operation was necessary, as she had cancer. As he could not promise a cure and said that the operation would be very disfiguring, they decided to take her home. She was again under the care of her family physician and her people were under the impression that she would live only a few months.

On examination, May 1, 1911, I found the following condition:

Tenderness over the right maxillary sinus; exophthalmos of the right eye and vision almost gone; eye sensitive to light; the left naris unobstructed. There was a large opening through the canine fossa into the maxillary sinus, the result of operative procedure. Pus was discharging freely through this opening into the mouth. The right inferior turbinal had been removed and all of the nasal chamber above was filled with a pinkish grumous mass of tissue.

The patient entered the Woman's Hospital, May 30, 1911, where she was seen by Dr. Margaret F. Butler in consultation with me. On transillumination, we found the right maxillary sinus darker than the left. A probe passed through the opening in the canine fossa easily entered the sphenoidal sinus to a distance beyond 13 cm. without meeting resistance. The direction was through the floor of the sella, and as we did not then have x-ray facilities at hand, we did not dare to probe further in that direction. We curetted a considerable mass of soft tissue from the ethmoidal region, but the bleeding was so great that we were compelled to desist from further interference.

The following is a report of the microscopical examination of the tissue, as found in the Woman's Hospital:

"A large amount of glandular tissue without malignant degeneration: connective tissue increase and thickening of vessel walls. Not malignant; may be simple hyperplasia of glandular tissue due to regeneration after an inflammatory process, or an absolute increase of glandular elements, i. e., adenoma."

We wrote to the Methodist Hospital for a report of the case. The reply was as follows:

"There was no history kept of Mrs. K.'s case; her diagnosis was carcinoma of right antrum of Highmore."

Dr. Miriam Butts' report of the examination of the eyes was:

"No vision in right eye; no reaction to light. Pupils are equal. Left pupil reacts to light and accommodation. Right eye shows a very marked projection of the vessels at the mascular region and below in the periphery of the retina. Right optic nerve does not look very different from the left, although it is rather paler. I believe the eye is blind, either from temporary pressure on the optic nerve posterior to the eye, or to post-neuritic atrophy of the optic nerve of recent date."

Blood examination: Hemoglobin, 65 per cent; red blood cells, 3,140,000; white blood cells, 21,400.

The mental condition grew worse, the patient becoming maniacal and suffering so intensely that it was necessary to keep her tied to the bed. Opiates and other hypnotics gave her no relief.

As the case seemed desperate, on June 20, 1911, under ether anesthesia, Dr. Butler ligated the common carotid artery and then made a thorough exenteration of the ethmoidal and sphenoidal sinuses. The growth had destroyed the roof of the sphenoidal sinus and invaded the cerebral cavity. The soft tissue was cleared away in this region.

It is to be regretted that x-ray studies were not made in this case, as we never knew exactly the extent of the intracranial involvement. As the patient was *in extremis* when she came to us, less study was done than should have been. Consultation with a neurologist would also have been an advantage.

After operation, the patient was immediately relieved of pain. The circulation in the carotid was restored within a week. Her temperature ranged from 96.8° to 99.8°; pulse, 96-108. Her raving ceased, and she left the hospital July 5 very much improved.

Microscopical report of the second scrapings showed malignant degeneration.

Present condition of patient: General health excellent. She has gained forty-five pounds. Right eye blind. Sinus in mouth is closed. Right naris is healthy, no obstruction, tissue firm, no tenderness on pressure. Occasional headache. She has not had severe pain since her last operation. She has delusions and thinks people are talking about her. She cannot remember, is irritable and her mental condition is poor, but she has been able to do her housework most of the time since her operation.

1831 Chestnut Street.

Epithelioma of the Nose Apparently Caused by Irritation from Tortoise Shell Spectacles. LUCIUS F. HERZ, *Medical Record*, March 3, 1917.

Patient, 56 years old, presented a growth on the right upper portion of his nose, one centimeter in diameter, of nine months' duration, corresponding to that portion of the nose where his spectacles rested. Growth excised and histological examination showed it to be epithelioma of the basal cell type. ED.

REPORT OF A CASE OF SAFETY-PIN IN THE ESOPHAGUS DISPLACED DURING ANESTHESIA AND LODGING IN THE POST-NASAL SPACE.

Dr. A. Spencer Kaufman, Philadelphia.

It takes very little imaginative power to think of the amount of damage that an operator would inflict in attempting to turn an open safety pin in the esophagus, but this is what apparently happened during expulsive efforts, with no more injury than a few scratches on the mucous membrane in the case I am about to relate.

I was called to see Miss W., aged 19, at the Samaritan Hospital. She had swallowed an open safety pin, which was located by x-ray about four and one-half inches down the esophagus.

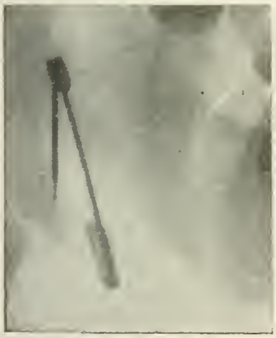

Fig. 1.

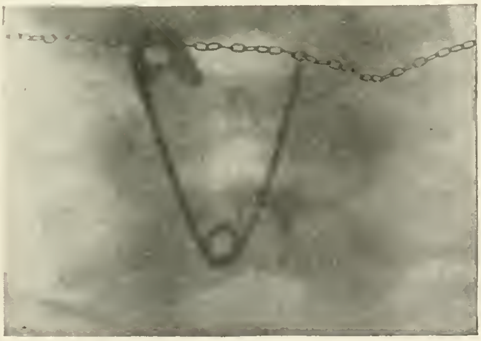

Fig. 2.

She was given ether, which caused some retching and vomiting, but not any more than is frequently seen in a person not prepared for anesthesia. The esophagoscope was introduced, but the only evidence of the pin was a few punctate hemorrhages in the mucous membrane corresponding to the location of the foreign body, as indicated by the radiograph. The esophagus was searched throughout its length without result, and the natural conclusion was that it had descended to the stomach, and the patient was returned to her room with orders to have her stomach x-rayed, as well as a re-examination of the esophagus. This was done the next morning, but no trace of the pin was found in either structure, so Dr. G. C. Bird, the skiagrapher, made an examination of the head, and it was due to this example of his thoroughness that the pin was found lodged in the post-nasal space, point down. Acting under instructions from the family physician, who first got this report, Dr. Bird looked into the throat, and with very little difficulty, grasped the pin with a pair of curved hemostats, and removed it.

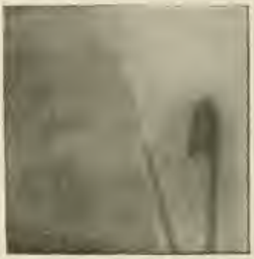

Fig. 3.

I am indebted to Dr. J. L. Manasses for having seen this interesting case.

254 South Sixteenth Street.

REPORT OF A CASE OF MEMBRANOUS INFECTION OF THE NOSE AND ANTRUM, RESULTING FATALLY.

Dr. A. Spencer Kaufman, Philadelphia.

This case was seen in consultation with Dr. Broadfield, of Llenerch, Pa., December 26, 1914, from whom the following history was obtained:

H. W., white, male, 30 years old, had an attack of what seemed to be influenza about December 1, from the effects of which he was quite ill. About the middle of the month the patient had obstructed nasal breathing on the left side, due to a pseudomembrane filling up that nostril. Diphtheria was immediately thought of, and cultures made, with negative results. The membrane was very tough and would re-form in a short time after removal. A few days later, severe pain and edema developed over the left maxillary sinus, and it was at this time that I was asked to see him.

Transillumination showed complete density of the antrum affected, and under cocaine a trocar was introduced, but no fluid obtained, although for a day or two there was some relief.

The existing symptoms became more severe five days later and, in addition, his temperature became septic in type, and there was some paralysis of the muscles of the left side of the face. An operation was decided upon.

The patient was removed to the Jefferson Hospital on December 31.

Dr. Manges gave the following x-ray report: Empyema of left maxillary sinus, and considerable thickening of left ethmoid.

Urinalysis showed albumen, some pus, many granular and a few leukocytic casts.

Operation under local anesthesia was refused, so he was given ether and the pre-turbinal opening into the antrum was made. The cavity was found to be completely filled with the same sort of pseudo-membrane that blocked the nostril. It was impossible to remove this debris through the nasal opening, so a counter opening was made through the canine fossa, which permitted a thorough cleaning of the antrum.

The tissue removed was sent to the laboratory, and the following report given: Histological examination showed necrotic tissue consisting of poorly stained masses of fibrin, cells and granular debris. The cells were composed of erthrocytes and polynuclear leukocytes. Cultures of pneumococci were obtained.

After operation there was considerable cellulitis of the face, lasting for several days.

The septic temperature, ranging from 97.3° to 101.1°, continued after operation, and myocarditis developed.

Sixteen days after operation, a swelling became pronounced on the left side of the neck. Fluctuation called for incision three days later, and a quantity of pus was evacuated. Vaccines, both stock and autogenous, were given without reaction or results, and the heart continued giving a great deal of trouble.

The patient became dissatisfied at the hospital and wished to be taken home, which was granted on the twenty-first day, he being taken out in the ambulance.

At home, his general condition remained about the same, and an abscess developed on the right side of the neck, which was opened on February 10, forty-one days after operation.

The facial paralysis did not clear up, and, in addition, the muscles of deglutition became involved, rendering swallowing impossible, and necessitating feeding through a tube.

Death occurred February 17, or forty-eight days after operation. Unfortunately, no necropsy was obtainable.

254 South Sixteenth Street.

THE REMOVAL OF TONSILS AS A PROPHYLACTIC MEASURE IN ALL CHILDREN OF FOUR YEARS OF AGE.*

Dr. Richard W. Perry, Seattle, Wash.

In advising the removal of every tonsil in children, as a prophylactic measure, I am aware that I am taking a somewhat advanced position, yet I feel that it is not that the facts of the case do not support my contention, but that the subject has been so befogged by misconception that it is very difficult to face it free from its mythical past.

When we discarded the ring tonsillotome for the more rational method of tonsil enucleation we failed, at the same time, to discard our mistaken ideas of tonsil life, history and function. I know of no subject where anatomists, physiologists, pathologists, and, I am sorry to say, laryngologists, seem to have so combined, without fact or reason, to dignify pathological tissue into an organ and to invent imaginary functions for the same. This phase of the subject, however, is showing rapid improvements.

What, then, is the tonsil? The tonsil is a lymphatic gland with a hair-lip. It is not unreasonable to assume that this gland, like all other lymphatic glands, was originally completely enclosed in its capsule and so protected by it from the many infections to which it now becomes the victim; that during the process of evolution the pillars of the fauces separated, and with them the capsule of the tonsil to which they were attached became split, and through this split an internal organ became exposed to external contamination.

The exposure of the gland with retention of its power of absorption, together with its profuse and intricate lymphatic connection with the heart, would strongly suggest a developmental defect. Nature, originally, made no such great mistake as this. It is the open door to disease, and, just as the inguinal canal is developmentally a weak spot in the wall of the abdominal cavity, so the tonsil is a breach in the defensive armor of the body. It is a series of culture tubes in an ideal thermostat—and investigation has proven it almost constantly septic. If a city sewer is turned into the water main you have the same condition that the tonsil presents in respect to the body, and its effect is not less fatal.

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*Read before the Pacific Coast Oto-Ophthalmological Society, San Francisco, June, 1915. Demonstrated before the Clinical Congress of Surgeons, Philadelphia, October, 1916.

The tonsil is an irritative hyperplasia of a lymphatic gland. The first result of the irritation is a swelling of the gland and the passing of some of the swollen tissue through the rent in the capsule and into the pharynx. The rent in the capsule may be too small to permit the presenting of much tissue through it, so the tonsil is forced to enlarge outward and form what is called the sunken tonsil. So that we have three types of tonsil, depending on the length of the rent in the capsule: the sunken tonsil, the semi-extracapsular tonsil and the extracapsular tonsil.

To those who object to tonsil removal I would draw attention to the fact that Nature herself is the great tonsil operator. Her methods are unfortunately slow and incomplete. We have first the swelling of the gland element and consequent formation of the tonsil; following this, the next stage in the process is the atrophy of the gland elements and the replacing of them by connective tissue; in the end, the tonsil is replaced by a mass of scar tissue, when Nature's operation is completed. It is unfortunate that Nature takes many years to perform this operation, and in only a small percentage of the cases is the tonsil completely destroyed, but remains on in adult life a source of infection and trouble.

What do we hold against the tonsil that we should so demand its removal? In covering recent medical literature, we find the tonsil blamed for many ailments. I will enumerate some of them as follows: rheumatism, tubercular glands of the neck, chronic tonsilitis, quinsy, aural catarrh, laryngitis, glandular fever, appendicitis, osteomyelitis, ulcer of the stomach, general sepsis, meningitis, anemia, iritis, pleurisy, endocarditis, pneumonia, nephritis, orchitis, goiter, St. Vitus dance, acute infectious diseases of children—diphtheria, scarlet fever, cerebro-spinal meningitis; and, in fact, there is scarcely an ailment produced by either acute or chronic infection where the poison may not find its entrance through this channel.

The streptococcus, in its many forms, is a normal habitat of the mouth. It is on account of the virulence and activity of this germ that the prevention of a solution in the continuity of any of the tissues of the mouth is one of the most important principles of prophylactic medicine. After the sixth month from the time of the opening of the plica tonsillaris the tonsil becomes a solution in the continuity of the tissues of the mouth. This ever present germ breeds constantly in the crypts of the tonsil, passing outward, and infecting not only the mucous membrane and sinuses of the carrier but all other members of the family as well. It passes inward through the lymphatic system to the blood stream and causes many of the ailments enumerated above.

The physician who advises the removal of the tonsil only when he finds it diseased is hopelessly out of date. We must learn to diagnose tonsil conditions by systemic manifestations, not by local appearances. Iritis, enlarged thyroids, chronic joint affections, the growing pains and extreme nervousness in children are samples only of many conditions which may be tonsillar in origin, yet impossible to diagnose by any local examination. Is not scarlet fever an acute infection of the tonsil by hæmolitic streptococcus? Is not St. Vitus' dance a rheumatic manifestation of the same germ? Glandular fever and acute nephritis are also similar products; but this arraignment could be continued indefinitely.

In this connection I would like to quote Dr. Brown, superintendent of the school clinic in our city, where 8500 children are examined annually. He says "One child in every twenty that we examine has albumin in the urine. This albumin can usually be traced to a tonsillar origin and clears up on tonsillar enucleation. One child in every thirty has heart lesions, which, in every case, can be traced to previous tonsillitis. Four in every hundred of the older boys are excluded from strenuous games on account of valvular lesions of the heart, all of which cases give a history of sore throat. Last year the superintendent reported a three per cent increase in general efficiency of the school children, due, I believe, to our campaign of tonsil enucleation. It would be impossible to overdraw for me the picture of tonsil perfidy."

Our city doctors in charge of the isolation department tell me that they have never found a case of diphtheria in a patient who has had the tonsils enucleated, and that diphtheria and scarlet fever are not found in such patients. Dr. Cullen Welty, of San Francisco, says, in regard to diphtheria at the isolation hospital: "We have not had a single case of diphtheria where the tonsils have been completely enucleated." Dr. Wilson Johnston declares that universal tonsil enucleation would put half the laryngologists and children's specialists out of work.

One word to pendulum swingers: We are constantly confronted with the statement that the pendulum of tonsil enucleation will soon begin to swing back. To these I would like to draw attention to the fact that the present improved status of the tonsil question is due to two causes: first, more accurate and more conclusive scientific and clinical data as to the tonsil's lack of useful function and to its pernicious power of germ breeding and aseptic absorption; second, to the improvement in our surgical technique, which is making the numerous unfortunate fatalities and frequent muscle lacerations a thing of the past. The pendulum, in this connection, has been "up in the air" long enough and will not reach the perpendicular until we arrive at the time of universal tonsil enucleation.

What, then, is the tonsil's credit that it should be retained? What about its developmental function? Its sexual function? Its voice function? Its protective function? Or the many other mythical functions that have been invented as an excuse for the existence of this pathological lymphatic gland? There is no direct evidence that it has any function, and if we used our microscopes more and our imaginations less we never would have looked for the gland to have a function beyond that of any ordinary lymphatic gland. The enlarged tonsil is, histologically speaking, identical with the enlarged gland of the coal miner, minus the coal dust deposit. Recently, in the query column of the Journal of the American Medical Association, we found the following answer: "There is no reliable evidence that the removal of the tonsils has any deleterious effect on the general system, but there is abundant proof that the results are in many ways decidedly beneficial." If the tonsil is the open door for the entrance of infection, then it is our first duty to close this door at the earliest possible moment and to put upon it the seal of scar tissue.

I advise early removal of the tonsils for two reasons: first, the early protection that it gives against infectious diseases, acute and chronic; secondly, because the operation is simple in direct proportion to the youth of the patient, and safe in direct proportion to its simplicity. I have said the younger the patient the safer the operation, and on this hangs the crux of the whole matter. The capsule and tonsil attachments in the adult are different from those in the child, and our ability to make the tonsil extracapsular from the semi-extracapsular or sunken tonsil comes to the vanishing point as the patient gets older and the free head of the tonsil becomes attached to the surrounding tissues.

Let us take, then, the three types of tonsil: the extracapsular, the semi-extracapsular and the sunken. Now, if we imagine the tonsil as a lymphatic gland with a split in the capsule, and that split may extend for the whole length, two-thirds length or one-third length of the gland, we have an explanation for the three types of tonsil above mentioned: first, the extracapsular, in which the tonsil capsule has been split throughout its entire length; second, the semi-extracapsular or ordinary, in which the tonsil is partly extracapsular and partly intracapsular; and third, the sunken, in which the tonsil is almost completely within the capsule. It will readily be seen that the extracapsular type of tonsil can be removed by the cold snare without any further dissection or manipulation, and the first aim of the surgeon must be to make the second and third type of tonsil extracapsular, when they can be as readily removed as the first type.

The operation is performed in detail as follows:

Ether is always used as anesthetic, chloroform never. Apart from any scientific reasons, the history of the past few years shows ample evidence that chloroform should never be used in this operation.

"Head down" is the sheet-anchor of safety in all tonsil work. So-called ether pneumonias are operation pneumonias and should be called anesthetist pneumonias; and can be avoided if gravity is given a chance and a proper suction pump used. These patients should never be allowed to smother in their own secretions. The table used is one that can be lowered at a moment's notice. A double half-hitch is taken around the ankle and firmly attached to the table, so that the head may be lowered or raised without disturbing the position of the patient. A small amount of secretion, when churned to a froth in the small larynx of a child, will readily cause sufficient obstruction to endanger life. A suction apparatus is invaluable and should be in the hands of every laryngologist. A Green gag is used with which the lower jaw can be held forward in a semi-suspension position.

The great handicap to rational tonsil surgery, in the past has been the lack of a proper tenaculum. By a proper tenaculum I mean one that can be passed to the top of the intrascapular tonsil in all cases without including in its grip any part of the capsule or pillars and without destroying the normal cohesion of the tonsil tissue. In my mind, the only instrument at present on the American market that answers these requirements is the Lewis tonsil tenaculum as made by Mueller of Chicago. The forceps tenacula used almost exclusively at present is entirely inadequate for this work. It usually takes in its grip only the extracapsular portion of the tonsil, and from the surgeon's point of view the extracapsular portion should always be disregarded. If it grips farther it is apt to include in its grip the edges of the pillars, and this is fatal to the performance of a scientific operation. If passed within the tonsil it must be opened before it can close, and in the opening breaks up the normal tonsillar resistance on which the operator must depend in making the tonsil extracapsular. The desire of the surgeon should be to make the peculiar anatomy of the tonsil assist him as far as possible so that, in place of a tedious mutilation, he gets a simple eversion. With this end in view, no incision is made and no dissection, either sharp or blunt, permitted.

The screw tenaculum is inserted with a reverse motion until the pillars are passed, then screwed up until firmly attached to the upper and most distant part of the intrascapular tonsil. The shank prevents too deep an attachment, so there is no danger of passing through the capsule and into the superior constrictor muscle of the pharynx. I now draw the tonsil toward the throat and, with a Hurd pillar retractor, turn the upper margin of the pillars back over the tonsil equator. This turns the capsule inside out, the entire tonsil having passed through the rent in its own capsule, when a snare readily removes the tonsil and capsule entire. If the space behind the anterior pillar is seen to bulge, the tonsil is not completely through, but with slight pressure over the bulging portion it will soon pass through and the space behind the pillar become vacant. I use the largest piano wire that the snare will conveniently handle.

A clear field and perfect illumination are necessary. Window illumination is not good enough for this work. If a screw snare is used and sufficient time given, the operation can be made almost bloodless.

The advantages of this operation are its simplicity of execution and its freedom from hemorrhage. Bleeding in tonsil operations, if immediate and severe, is usually from a large supernumerary vessel often seen lying like a snake at the bottom of the wound on the superior constrictor muscle. In this method the operator works away from trouble instead of pressing the dangerous tissues into the instrument, and bleeding from this source is impossible.

In conclusion, then, I wish to go on record as advising the removal of every tonsil at four years of age, irrespective of its condition, or as much younger as infection may indicate. In view of the tonsil's lack of any proven function, its ease and safety of removal and its baneful effect on the economy, I do not see how any system of scientific reasoning can arrive at any different conclusion.

American Bank Building.

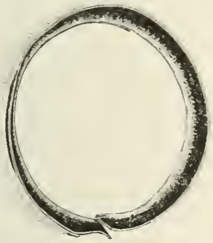
Some Surgical Considerations Concerning the Operation for Goiter. H. B. Epstein, *Amer. Jour. Surg.*, Jan., 1917.

1. The collar incision should be of sufficient length to permit a free dissection, the ample space giving the surgeon better exposure and making the procedure safe. 2. The choice of alert assistants, for rapid hemostasis is essential. This together with speed saves the patient from unnecessarily long anesthesia, too much handling, and shock. 3. After separating the fibers of the sternothyroid muscle, keep close to the gland throughout the separation. If necessary, the sternocleidomastoid muscle may be cut across to give better exposure to the parts, the ends being sutured after the gland is removed. Care should be exercised to avoid the spinal accessory nerve. 4. Careful dissection of the posterior and lateral borders in order to avoid injury to the carotid sheath or the inferior laryngeal nerves. 5. Be sure to expose freely the upper pole of the gland so that a safe ligation may be performed with a generous pedicle. If necessary, cut the transverse layer of the deep cervical fascia. Ed.

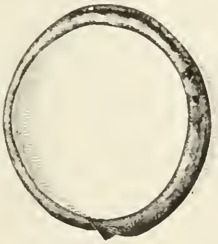
A CASE OF A RARE FOREIGN BODY IN THE ORAL CAVITY.

Dr. John L. Lougee, Boston, Mass.

Joseph T., aged six years, came to the Nose and Throat Department of the Carney Hospital, April 1, 1914. The following history was obtained from his mother: When about two years old the child was seized with a violent attack of coughing. The mother knowing his tendency for putting small articles in his mouth, suspected this to be the cause of the sudden paroxysm and made careful search but found nothing. The family physician was then called but an examination failed to discover any abnormal condition. The boy was then taken to a local hospital where several radiographs of the chest and stomach were made but they failed to reveal the presence of a foreign body. During the following five weeks the child's mouth was extremely sore and for several days he refused to eat. Saliva, stained with blood, dribbled from his mouth almost constantly. At the end of this time he seemed to regain his normal appetite and health but the cause of the attack, with its train of symptoms, was still unexplained. Nothing further was done until about two years later, when the patient was taken to one of the larger hospitals on account of an impediment of speech and a foul odor of the breath. Here, after examination, the mother was told that there was no apparent cause for this condition and being in a measure reassured, no further attention was given the matter.



No. 1. Cutting edges of ring.



No. 2. Rounded surface of ring.

However, about two years later, on April 1, 1914, as the odor of the breath and the speech defect still persisted the patient was taken to the Carney Hospital, where he was seen by the writer.

When the boy was asked to protrude his tongue its unnatural mobility was plainly noticeable in that he was able, with apparent ease, to touch the tip of the nose, and to extend the organ two inches to either side of the angle of the mouth. This was found to be due to the fact that the frenum, with its vessels, had been completely severed. A necrotic area of about the size of a dime was found in the floor of the mouth just in front of the root of the tongue. On examination with a probe, a metallic substance was felt. The following day the child was given ether, the tip of the tongue was grasped with a tenaculum and drawn to one side. Examination with the index finger discovered the metal object to be a ring which encircled the tongue, making a deep depression, the tissues overlapping and completely hiding it from view.

After cutting the ring, beneath the tongue, with scissors, it was spread and removed without difficulty, very little bleeding following. The necrotic area was swabbed with tincture of iodin and the patient was allowed to leave the hospital on the third day after operation. He was subsequently attended in the out-patient department. The wound healed rapidly and when the boy was discharged three months later, his speech defect had entirely disappeared.

514 Commonwealth Avenue.

End Results of Treatment of Chronic Suppurative Otitis Media.

JOHN F. BARNHILL, *Jour. Amer. Med. Assn.*, Jan. 6, 1917.

The end results will depend upon the age of the patient, condition of the nose, nasopharynx and pharynx, nature and severity of the original aural infection, the presence of complications, the period of the disease in which the attempt to cure is made, the general physical condition of the patient, the efficiency of after-treatment. The author states that suppuration is cured in probably 90 per cent of cases. The effect on hearing of middle ear operation is good. Where bone necrosis occurs the patient's life is in danger and surgical treatment is the best recourse. ED.

FIBROMA OF THE LEFT NASAL CHAMBER, WITH EXTENSION INTO THE POST-NASAL FOSSA.

REPORT OF A CASE,*

DR. THOMAS CHEW WORTHINGTON, Baltimore, Md.

Little is known as to the etiology of nasal fibroma. This particular form of nasal or naso-pharyngeal tumor is more frequent among males. With comparatively few exceptions it is confined to youth and early adult life. As the name implies, fibroma is "a tumor composed mainly of fibrous or fully developed connective tissue." (Dorland.)

Bosworth[1] states: "Perhaps no form of neoplasm develops and spreads with a more unrelenting progress than a fibroma; neither tissue, cartilage, nor bone seems to offer the slightest hindrance to its growth. . . . On account of its location and its nearness to vital parts, a fibroma of the nose will eventually prove fatal, unless subjected to successful operative interference."

According to Price-Brown[2] of Toronto: "The relentless growth of fibroma is one of its characteristics, and in this it resembles sarcoma. The more irregular contour with the presence of greater pain and a larger amount of surface sloughing should distinguish the latter; but it will require microscopical examination to complete the diagnosis. Without successful operation the result will always be unfavorable; a fatal result is inevitable."

Parker[3] of London, states: "The symptoms are, gradually increasing nasal obstruction, muco-purulent and later purulent and blood-stained discharge, attacks of severe epistaxis, a slowly progressing deformity of the nose and face, headache, anosmia, and deafness. In appearance the surface of the growth is smooth and red, but often coarsely lobulated. It is hard and immovable and highly resistent to pressure with a probe. If left alone it causes death by exhaustion, or encroachment on vital structures. The only successful treatment is the complete removal of the growth, the exact method of accomplishing which will depend on its size and attachments."

In the recent work of Wright and Smith[4] we find the following: "Personally Dr. Wright has seen only two or three growths in twenty years' experience largely devoted to histological work which he has been disposed to call fibroma of the nasal chamber proper. Such purely intra-nasal growths as show little or nothing but dense, wavy fibers of connective tissue with sparse nuclei or cellular elements, and scanty blood vessels are exceedingly rare; round, smooth, hard, their density is such as to distinguish them from the usual nasal growth. Their base of attachment is usually a more or less constricted one. Their removal is usually not followed by recurrence."

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*Read at the meeting of the Eastern Section of the American Laryngological, Rhinological and Otological Society, at Philadelphia, March 3, 1917.

J. Bland-Sutton[5] says: "Fibromata or tumors composed of fibrous tissue were regarded as common, but careful histological research has shown them to be very rare."

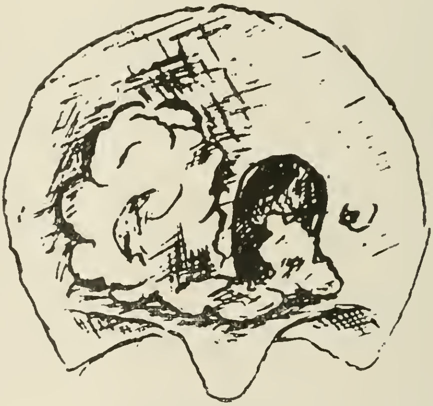

Fig. 1. June 17, 1902, before operation.

The abstracts which I have just read have been taken from well-known authors and definitely indicate the following opinions: that true fibroma is a rare form of nasal growth and that sooner or later nasal or naso-pharyngeal fibroma will become incompatible with life, either from pressure on important structures, or from the exhaustion of hemorrhage incident to this disease. It is a clinically established fact that with few exceptions fibroma of the nose, the naso-pharynx, or of both is sessile; its base of attachment is broad; when pedunculated the question as to whether it is true fibroma is in doubt until verified by the microscope. The treatment of nasal fibroma is surgical, whether by the knife, forceps, snare, cautery, or by the injection of destructive chemicals. The application of radium and of the x-ray have as yet been limited. The position of the tumor near important structures, its density, broad attachments and vascular environment make strong efforts at evulsion dangerous in the extreme, yet this danger is not nearly so great as that resulting from the severe and exhausting hemorrhages which sooner or later will occur, but which rapidly supervene on surgical interference with these fibrous tumors. The prognosis is bad in proportion to the size and attachments of the tumor. That the ingenuity of the surgeon is often severely taxed, I found to be true in the case which I now desire to report.

R. D., white, aged 16 years, was referred by Dr. J. E. Bromwell of Mt. Airy, Md., June 17, 1902.

History. The patient does not remember ever having breathed well through his nose. For about one year the left side of the nose had been entirely closed; very little air passes through the right side and then only at times. There is difficulty in swallowing. There is a confused feeling in the head. He cannot think well.

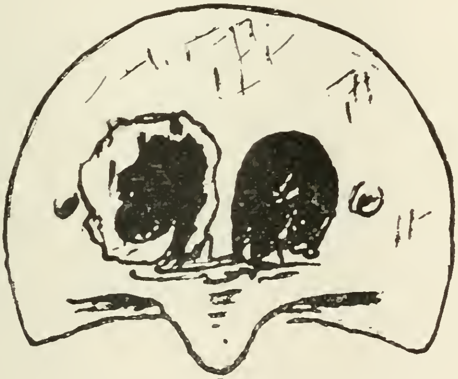

Fig. 2. After Sept. 18, 1902.

Examination at office: Present conditions and description of the nasal growth. The right nasal chamber is very narrow; this is caused by pressure on the septum from the mass in the left nasal chamber. Anteriorly the fibroma fills the left nasal chamber completely and protrudes from the vestibule of the nose. The external nasal wall and the septum are eroded. The inferior turbinal body has been destroyed. The appearance of the growth is a grayish pink; it is firm to the touch and immovable. No air passes through the left side of the nose even with the greatest effort, and very little air passes through the right side. Posteriorly the left choanal opening is sealed; the growth extends from the roof of the post-nasal fossa of the left side to the palatal floor and across to the right side. In a pyramidal form it arises from the floor of the fossa and partly closes the right choanal opening.

Subsequent operative measures showed that the fibroma was attached to the body of the sphenoid, including the sphenoidal sinus which had been completely obliterated and that the ethmoidal labyrinth had been greatly destroyed.

The following examinations and subsequent operations were made at the Baltimore Eye, Ear and Throat Hospital:

June 18, 1902. Examination under cocaine and adrenalin. No impression could be made on the growth either anteriorly or posteriorly. Even with slight effort at examination, bleeding was profuse but was easily controlled.

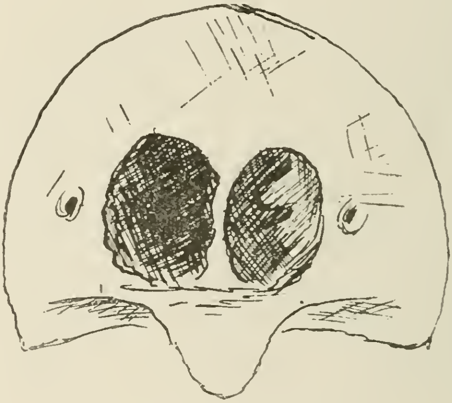

Fig. 3. Jan. 20, 1904.

July 12, 1902. First operation under general anesthesia. In order to guard against excessive hemorrhage incident to operation, I made use of Bernays' large aseptic sponge in the following manner: Linen tape was fastened to the sponge through two openings made in the center of the disc, and after the patient was asleep the ends of the tape were carried up through the right side of the nose and given in charge of an assistant. The Bernays sponge was kept well out of the mouth and protected by the assistant. The instant it became necessary to stop the hemorrhage, the sponge was pushed up into the post-nasal fossa and by drawing forcibly on the tape the fossa was tightly closed. The pressure was equalized by the swelling of the sponge, thus immediately checking all bleeding posteriorly. Anteriorly the hemorrhage was controlled by the usual methods. There was no post-operative hemorrhage at any time.

The snare could not be used either anteriorly or posteriorly. Cutting or evulsion forceps made no impression on the growth. I made use of Asch's gouge within the nose in the effort to break through or to loosen the growth from its attachments, apparently with some effect, but even in a few minutes much blood was lost and it quickly became necessary to tampon tightly.

July 20, 1902. A stream of water could be forced through the left nasal cavity, but no air could be forced through the nose by the patient. The growth in the nasal passage was apparently smaller than at the time of the operation on July 12. The growth was not so full in appearance, and, viewed in the post-nasal mirror, several irregular openings could be seen. At this examination, July 20, a partially detached piece of the fibroma was removed by evulsion through the post-nasal fossa. A microscopical section of this piece was made. The boy's breathing was still so unsatisfactory that he was anxious for another operation.

Fig. 4. Specimen.

July 29, 1902. Second operation under general anesthesia. The growth was still so adherent and unyielding that I hesitated to use the force necessary for evulsion. With long, specially made, transfixing needles I endeavored to engage a part of the growth with the snare but with no success.

A Bosworth saw was then forced through the left side of the nose and into the post-nasal fossa and with a finger in the fossa as a guide.

I endeavored to saw through or ream out the growth; but on account of profuse bleeding it was again necessary to tampon as before. After the tampon was removed and in order to retain the opening made, and for the purpose of exerting pressure on the growth, a rubber obturator fashioned from a piece of thick gray rubber was now passed forcibly through the nose, and well back into the naso-pharynx; this was worn for two weeks. It was removed only for cleansing purposes during this time.

September 17, 1902. There was less growth in the nasal chamber, except about the sphenoidal region where the fibroma was still prominent; the size of the growth in the post-nasal fossa was also less, and the mirror showed several large openings into the nose.

September 18, 1902. Third operation under general anesthesia. Again the snare could not be made use of, the toughness and smoothness of the growth were such that no piece could be caught and held within the loop of wire; therefore, alternating with Beckman's scissors and Seiler's knife passed in through the nose, I endeavored to destroy the growth within the nose and around the choanal opening as much and as quickly as possible; this was followed by rapid evulsion with forceps used both anteriorly and posteriorly. By this method several large pieces of the growth were removed. This required only a few moments, but bleeding was severe and the nose and naso-pharynx were again tamponed tightly.

After the third operation the nasal breathing was clear. About the outer margin of the left choana and around the floor only an irregular rim of the growth could be seen; the growth in the lower part of the right choana was also much smaller; the sphenoidal body was yet well covered with the growth but to a much less extent than before the last operation.

On December 3, 1902, I noticed a slight increase in size of the growth about the sphenoidal body extending to the outer wall of the left nasal chamber. The patient had lost much blood and he was very anemic; he was in no condition for further operative measures at this time. On this date I therefore made two injections into the growth of a saturated solution of zinc chloride (10 m. each); this produced a slough, and for a week or more caused severe pain. This treatment seemed to have impaired the nutrition of the growth temporarily, but in size it soon assumed the same proportions as before the injections.

Between January, 1903, and March, 1903, I made several injections into the growth, alternating with trichloracetic acid, and with crystallized carbolic acid. The reaction from these injections including pain, stiffness of the jaws and neck, and with an offensive slough, was out of proportion to the diminution in the size of the growth. On August 18, 1903, there was a marked increase in the size of the growth about the sphenoidal body and downward into the nose. The patient had not yet recovered his strength from previous operations. Dr. Christian Deetjen, by my request, now used the x-ray on the growth, applying the ray through a tube in the nose. After four exposures the growth was not so plump or full as before, and it was much paler. Under the continuation of this treatment the fibroma gradually disappeared and on January 20, 1904, no growth was perceptible in the nose or in the post-nasal fossa. A year later, the patient was again examined and showed no sign of the growth; he was then in robust health.

After a period of ten years from the time of disappearance of the growth (March, 1914), the patient came to see me. The nose was still clear and there was no evidence of the fibroma; but he was ill; his legs were edematous; he had recently contracted syphilis and had been a very heavy drinker for several years. A few weeks later his mother informed me that her son had died from disease of the kidneys, at the age of 28.

Dr. Standish McCleary, Professor of Pathology in the University of Maryland, has kindly prepared the following description of the section, made of a mass of tissue removed from the post-nasal fossa, after the second operation on July 20, 1902:

"Part of the surface is covered by a mucous membrane composed of stratified ciliated epithelium, resting on a tunica propria containing mucous glands. The bulk of the section consists of closely packed bundles of dense, fibrous tissue; between the bundles are the characteristic cells of this form of connective tissue; some of the bundles are hyaline, but nowhere is there any tendency to myxomatous change; the blood vessels are abundant and of considerable size. Attached to one margin of the section is some cartilage containing quite an amount of fibrous tissue in the matrix. The growth is a particularly pure form of *fibroma durum*, hard fibroma."

In summarizing, I would call attention to the following:

(1) Only the most radical treatment could have impaired the vitality of this growth.

(2) Notwithstanding that the fibroma had been nearly destroyed, it suddenly showed evidence of re-growth about the sphenoid, and after treatment by the x-ray its absorption became complete.

(3) Until the young man's death ten years later there was no return of the fibroma.

(4) In the case here reported, the fibroma showed every evidence of endonasal origin in the sphenoidal body, subsequently invading the post-nasal fossa by extension.

In conclusion I would point out that few cases of nasal fibroma are reported *as such,* although there has been a steady increase in the number of cases reported of naso-pharyngeal fibroma.

In The Laryngoscope Index-Medicus of Oto-Laryngology for the years 1909-15 inclusive, thirty-five cases are reported of naso-pharyngeal fibroma. We find but one case of edematous fibroma of the nasal fossa, one of choanal fibroma, and one case of fibroma of the nose. This further indicates the rarity of true nasal fibroma, and this as well as the satisfactory result of treatment is my reason for reporting the case.

The specimen shown in the photograph represents but a small portion of the growth removed. The drawings as indicated by the dates, show the various stages in the disappearance of the tumor.

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2. Diseases of the Nose and Throat, 1900, p. 129.
3. Diseases of the Nose and Throat, 1906, p. 369.
4. Diseases of the Nose and Throat, by Wright and Smith, 1914, p. 247.
5. Tumours, Innocent and Malignant, 1906, p. 59.

1022 Madison Avenue.

These Cases Exemplifying Some Likely Common Causes of Cancer of the Throat and Some Facts About Treatment by Diathermy. W. Stuart-Low, Proc. Royal Soc. Med., Section Laryngol., Jan., 1917.

As regards contributory causes of cancer syphilis has been present in every case that the author investigated. Sepsis of the mouth, generally in an aggravated form, has invariably existed and the saliva has been found to be quite acid in reaction. Dental deficiency seems also to be a contributory cause. Diathermy proved to be very helpful in these cases. It undoubtedly relieves the pain and it seems best to repeat the application at intervals of a few days and not to apply it at one time too extensively or too severely. It should be employed as early as possible. Ed.

SINUS DISEASE WITH EXTERNAL DEFORMITY CURED BY PARAFFINE INJECTION.*

DR. S. G. DABNEY, Louisville, Ky.

On August 29, 1915, I was consulted by a lady apparently between 25 and 30 years old in regard to pain in her head and a turning outward of her left eye. The lady's complexion was very sallow, and her voice decidedly nasal; the left eye generally deviated far outwards, though sometimes it would appear nearly straight; but what struck me most at first glance was the odd way in which this lady wore her hair—some of it being brought down on the forehead nearly to the eyebrow. When she came from the reception room into my office I found that this hair concealed a depression over an inch in length, about half an inch in width and half an inch in depth. She was decidedly tender to pressure over the antrum of Highmore on the left side and at the upper inner angle of the orbit. Looking into the nose I found a large amount of pus in the region of the middle turbinate, the anterior end of which had been removed.

Transillumination showed the antrum of Highmore and the region of the frontal sinus on this side both dark. After cleansing the nose thoroughly I had the patient lie on the sofa with the head hanging downwards and the affected cheek uppermost. On sitting in the chair again, abundant pus was found oozing from the middle turbinate region. The ethmoid region was swollen and a probe carried into it brought further pus.

I advised the patient to have an operation on her antrum of Highmore and on her ethmoid, and also told her I thought I could fill up the cavity with paraffine.

The history as given below showed me that the eye trouble was due to an entirely different cause, but I advised her to have an operation on the eye also to straighten it. She accepted my advice.

I did an advancement of the internal rectus muscle on the eye and had the annoyance, which I have never had before in an advancement of producing an over-correction, drawing the eye somewhat inward. However, I corrected this later by advancing the external again to a moderate degree, and produced finally a straight eye with good movement in all directions.

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*Read before the Jefferson County Medical Society in Louisville, Ky., November, 1916.

For the depression in the brow, I injected paraffine (I have never been able to use this cold as the books often recommend). I made three injections of warm paraffine at intervals of some weeks with almost a perfect result so that the depression is practically obliterated.

After removing the anterior third of the inferior turbinate, I made a large and free opening into the antrum of Highmore. On various occasions I curetted and removed parts of the ethmoid cells.

All the work was done at my office under local anesthesia except the two operations on the eye. The result has been as the lady herself describes, a straight eye, her hair worn in the usual way with the natural looking brow and only slight discharge from her nose. She still has occasional pain on the affected side, still carries out cleansing treatment to the nostril, making it a part of her toilet and not much more trouble than cleaning her teeth, and now and then visits me when a little crust has accumulated in the nose and she suffers some pain in the eye. A simple easy removal of this crust gives her prompt relief.

I submit herewith the patient's history of her case. It will be observed that she has arranged the history according to years, beginning with the first year of her life when the accident to her eye occurred.

It will be observed, that in the main the symptoms were typical of sinus disease; the profuse one-sided discharge, the pain worse in the morning and diagnosed "sun-pain" and treated as malaria, the tenderness to pressure all around the left eye and the inability, as time went on, to concentrate her attention or to hold things in her memory.

In the first place the deviation of the eye had nothing to do in this case with the sinus trouble, nor do the headaches in childhood appear to be connected with it—perhaps these headaches were relieved by the glasses ordered in 1898.

In the second place, there is a doubt in my mind whether the *severe* nervous symptoms that this lady complained of were really due to the suppurative sinus disease; they occurred at the time when she was under a very great nervous strain from illness in her family and perhaps the sinus was only an additional cause of these symptoms. The mental hebetude and inability to fix the attention were doubtless due to the sinus suppuration.

In the third place. I would note that the result has been what I frequently find, namely, wonderful relief—perhaps practical cure—

but still occasional crusty or purulent discharge requiring cleansing at home, and occasional visits to the office to make more perfect cleansing of the nose.

When the nose becomes obstructed or congested she has pain in this eye which is quickly relieved by nasal treatment.

1886—Age about eight months: While creeping found a toy with rusty wire protruding. Wire caught in left eyelid; instantly jerked out, tearing lid and injuring eye. Attended by physician in my own town. Stitches repeatedly pulled out leaving torn lid. The eye turned out and the sight was impaired, but I was able to distinguish objects and light.

In childhood always subject to "blind headaches"—no apparent cause of attacks. Begun in morning with queer sensation and blurred vision. After an hour or so intense pain began over left eye, right eye or both. Slightly more frequent over left. Continued at least a day and night. Nothing relieved pain, but more bearable in dark, quiet place.

1898: Went to eye specialist for glasses to relieve headache.

1901: In boarding school. Building kept at high temperature; drove out in country for week end on cold November day, took severe cold; left side of head continued to discharge after the "cold" was well. No special pain, but great discomfort from excessive amount of discharge at the same hour each morning. Necessary to leave classroom.

1902: Another eye specialist changed glasses. Examined nose and remarked that I would likely have trouble from conditions then existing in left side of head. Advised use of atomizer.

1903: "Blind headaches" less frequent. Last attack in 1903, lasting a week.

Autumn: Daily headaches diagnosed by local doctor as "sun-pain." Severe pain began about eight o'clock. Pain grew less at noon, but face around left eye very tender to touch and seemed "puffed up." By evening, free from pain but the pain began again in the morning. Treated for malaria. Little relief until summer

1904: In college. Expression teacher sent me to a specialist on account of "nasal twang in speech." This physician treated throat and head for some months. Voice better at times but no permanent improvement. Treated for tuberculosis. Advised to go to a warm, dry climate.

1905: No improvement in head. Average weight 120 pounds; *very sallow*. College doctor treated me for "jaundice."

1907: Spent winter in Florida. Returned to Kentucky. In Louisville for a week. Had severe pain in face and eye and consulted a specialist the day I returned home. He said operation was necessary for "sinus trouble." Returned home, suffered great pain in left side of head and ear. In two weeks went to a large city in Indiana, where the infirmary and the specialist nearest my home were. This specialist treated throat and eyes for two weeks, changed glasses and said I did not need an operation.

1908: In February, while in college in Florida "sun-pain" returned. Pus on left side of head, intense pain mornings. Left side of face "puffed out," especially over left eye. Difficulty in new studies; could not retain new lessons when learned. Local physician ordered all new work stopped. Advised going to a specialist as early as possible.

In June, I went to a specialist in a large city in Florida. He removed a piece of bone from the nose; treated head six weeks. Greatly relieved.

1909: Returned to Kentucky in March. In a short time partially lost use of left arm; left half of tongue and the left side of the face under the eye was numb; difficulty in speaking. In May, lost all use of left arm except when looking at my hand. Any object in the hand fell if I did not keep it in mind. Under family physician's care; father ill at the same time of apoplexy. Slightly improved and returned to Florida in September.

1910: Spring. Teaching normal class. Had to keep a "grip on mind" or would repeat lesson assignments or explanations. Sometimes conscious of this afterwards, sometimes not. Very confusing. Had this trouble occasionally the next year.

1914: Called home from Florida in April on account of mother's illness. During summer, pain in head; arm and other symptoms returned. In autumn, went to an eastern hospital. A surgeon very distinguished for his brain surgery operated for "frontal sinus" trouble.

No more pain over the left eye; other conditions the same. Discharge continued. Gained weight, felt very well. The surgeon said when I left the hospital, "I see no reason why in time you will not get well, and be able to stay in any climate." In five or six weeks after operation, depression began to appear over the left eye reaching from eye to the middle of forehead; grew worse until it was about one and three-fourths inches long and one-half inch deep, just above the eye.

1915: Pain in face below the eye. Difficulty in breathing through the nose. Great discomfort from discharge. Very sallow.

Autumn: Consulted Dr. Dabney. He obliterated the depression over the left eye and straightened the eye. Treated antrum and operated on the nose.

1916: Depression filled. Antrum well. Eye straight and sight improved. General health splendid. Average weight 135 pounds. Slight discomfort in head (ethmoid) but with persistent home treatment—warm water and peroxide with dropper and with cotton on applicators—able to keep head fairly clear without irritation. Except occasionally head has a stopped-up feeling and the left eye gets red and has a burning sensation. Very unpleasant until head clears again, usually after some hard substance has been removed.

911 Starke Building.

A NEW NASAL SEPTUM SPLINT.

Dr. Margaret F. Butler, Philadelphia.

This simple device for the coaptation of the septal mucous membranes after submucous resection has given perfect satisfaction. It consists of two light plates of German silver. A movable flange attached to each plate projects from the nares, and these are secured in front of the columna by a slide catch. The plates make light and uniform pressure on the septum and prevent the formation of hematoma and bleeding. They are comfortable, the patient being able to breathe through the nose with them, and they cause no inflammation of the tissues such as we had when we used packing or the Simpson-Bernay splints. The splints may be removed at the end of twenty-four hours.

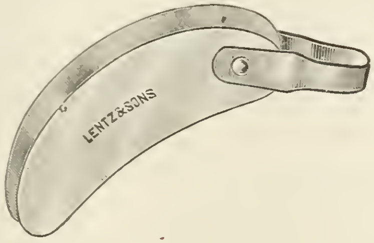

Fig. 1. Septal splint.

1831 Chestnut Street.

AN ELECTRICAL NOISE APPARATUS,

Dr. Max Lubman, New York.

I take the liberty to present to the profession a new electrical noise apparatus, which on account of its simplicity and small expense should find a ready response. We have now in use several contrivances for testing unilateral deafness, among others Barany's and Newman's. But these latter devices are so complex and expensive as to render their ready use prohibitive.

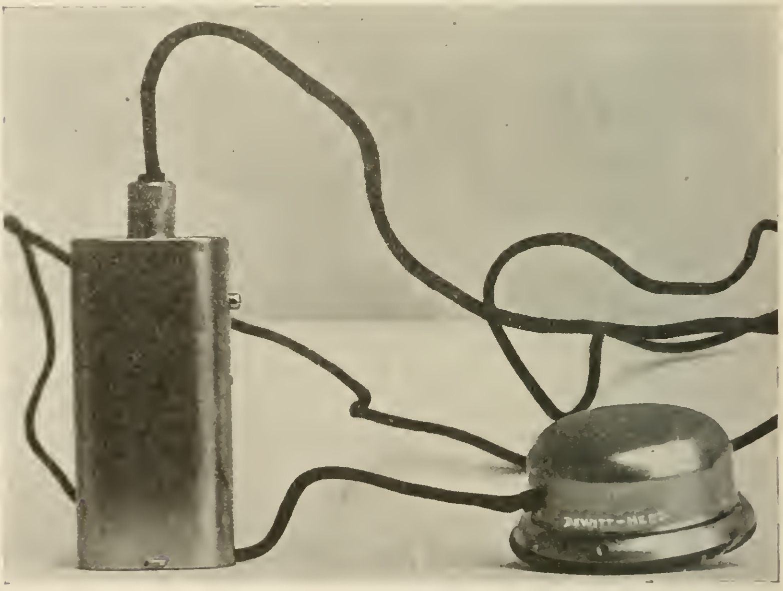

Fig. 1. Electrical noise apparatus.

The proposed electrical noise apparatus is composed of two magnetos, two coils and a vibrator set in a nickel case with a fiber base. It is operated by a small vest-pocket battery, easily procurable at any electrical supply store.

It may also possibly serve another advantage in that by not having an ear-piece as Barany's, it is applied directly over the ear of the patient and thereby excludes any transmission of sound through the bone of the ear.

616 Madison Avenue.

EDITORIAL DEPARTMENT

PERORAL ENDOSCOPY AND LARYNGEAL SURGERY.

Edited by
DR. CHEVALIER JACKSON, Philadelphia.

FOREIGN BODIES IN THE INSANE.

It seems quite likely that if routine radiography of the insane were regularly carried out, many obscure symptoms would be found to be of foreign body origin. Whether such routine radiography would have a deleterious effect on the mental condition of some patients the writer is unable to say; but it seems highly probable from the literature that there are many undiscovered cases of foreign bodies in the insane.

Dr. T. McS. Barrett (*Jour. Am. Med. Assn.*, Sept. 18, 1915) reports one of the most remarkable cases of laryngeal toleration of a foreign body that has appeared. The editor has obtained the specimen and has had a radiograph (Fig. 1) made from it. The report of the case is abstracted as follows:

A male negro, 40 years of age, confined in the Western Pennsylvania Hospital for the Insane for dementia praecox, died of a complication of diseases including chronic nephritis, pericarditis, endocarditis with valvular disease. Acute gastritis developed during the last three days preceding death which seemed to be due to exhaustion. A post-mortem by Dr. T. T. McS. Barrett revealed a brass key, two inches long, in the larynx, the ring end resting on the cords. In the right pyriform sinus was a screw-eye, one and one-half inches long, its screw-end extending upward above the glosso-epiglottic fold. There were no signs of local inflammation except on the epiglottis which showed a slight excoriation of its under surface where it had been subjected to pressure of the upper end of the key during swallowing. Both articles were wrapped in cloth which was very putrid. Although evidence is lacking to fix the exact time of the lodgment of these foreign bodies, the nature of the circumstances as well as of the presence of the articles at necropsy seems to justify the assumption that they had been in the throat for at least three weeks. With the exception of the comparatively mild vomiting which occurred only after eating, there were no violent symptoms of coughing, gagging or choking such as would be likely to accompany the presence of foreign bodies in the throat. The supposition is that this man, having found these articles while working outside,

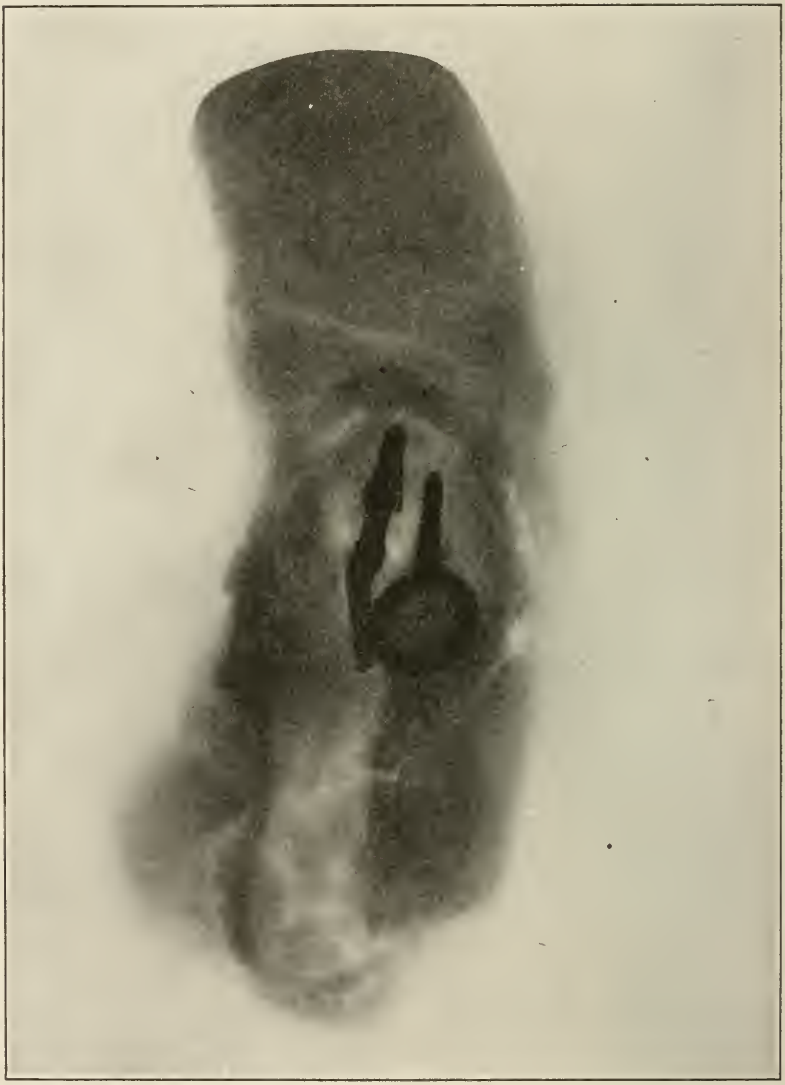

Fig. 1. Radiograph of post-mortem specimen of tongue, larynx and pharynx of an insane patient, showing a key and a screweye as they were found post-mortem.

and recognizing their utility for a special purpose that he had in view and fearing to be deprived of them during the search to which all patients submit at bedtime, sought to conceal them in his throat intending when necessary to recover them by regurgitation. Both of the objects projecting upward into the pharynx would have been readily visible on indirect laryngoscopy, and could easily have been removed. No examination was made of the throat because the man had a delusion that he was a deaf mute. It was known that he could both hear and speak. It seemed quite certain that the presence of the foreign bodies had absolutely nothing whatever to do with the patient's death.

SOCIETY ELECTIONS.

At the annual meeting of the American Otological Society held at Atlantic City, N. J., May 29 and 30, the following officers were elected:

President—Dr. Norval H. Pierce, Chicago.
Vice-president—Dr. Ewing W. Day, Pittsburg.
Secretary—Dr. George E. Shambaugh, Chicago.

At the annual meeting of the American Laryngological Association held at Atlantic City, N. J., May 28, 29 and 30, the following officers were elected:

President—Dr. Thomas H. Halsted, Syracuse, N. Y.
First Vice-president—Dr. John E. Rhodes, Chicago.
Second Vice-president—Dr. Crosby Greene, Jr., Boston.
Secretary—Dr. Harmon Smith, New York City.
Treasurer—Dr. J. Payson Clark, Boston.
Librarian—Dr. J. H. Bryan, Washington, D. C.

At the annual meeting of the American Laryngological, Rhinological and Otological Society held at Atlantic City, N. J., May 31 and June 1, the following officers were elected:

President—Dr. George L. Richards, Fall River, Mass.
Vice-president—Dr. Crosby Greene, Jr., Boston, Mass.
Vice-president—Dr. D. W. Layman, Indianapolis, Ind.
Vice-president—Dr. T. W. Moore, Huntington, W. Va.
Vice-president—Dr. F. R. Spencer, Boulder, Colo.
Vice-president—Dr. F. B. Graham, San Francisco, Cal.
Treasurer—Dr. E. W. Day, Pittsburg, Pa.
Secretary—Dr. W. H. Haskin, New York City.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Meeting of Dec. 20, 1916, cont'd.

Report of a Case of Pansinusitis on One Side with Tic Douloureux on the Other Side. No Operation; Necropsy with Unusual Findings. DR. WILLIAM LEDLIE CULBERT and DR. JAMES G. DWYER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

DISCUSSION.

DR. JOHN GUTTMAN said he would like to ask the roentgenologist whether the left antrum in that plate was clear. The right one was so absolutely obscured that one might not suspect infection of the left because the contrast was so great, but in reality the left ethmoid and maxillary sinuses appears to him diseased also. If his conception is correct, the whole clinical picture will have a different aspect.

DR. FREDERICK M. LAW said the left antrum was not absolutely clear but the contrast between the right and the left was so great that in comparing one was very apt to consider the left as clear. This plate was made some time before the patient's death and it was quite likely that at the time the plate was made there was less involvement on that particular side than at the time of autopsy. The plate shows irregularity on the inner wall of the orbit and the autopsy findings showed a perforation into the orbit, but one would not have been justified in making such a statement from the plates.

DR. WILLIAM H. HASKIN said, in regard to Dr. Law's remarks, that it was not uncommon to find large dehiscences in the inner wall or ethmoid plate of the orbit. He had ten or twelve specimens with very large dehiscences of the inner plate of the orbit opening into the nasal cavity. In this case there was evidently some old diseased condition.

DR. CALLISON asked: As pus was present in the left mastoid, did suction increase the amount?

Reference to Dr. Mayer's case at last meeting, claiming priority of total removal of the epiglottis under suspension for cancer.

DR. ARROWSMITH asked to be permitted to correct a statement he had made at the last meeting, in the discussion of Dr. Emil Mayer's report of a case of "Carcinoma of the Epiglottis: Removal Under Suspension." Dr. Mayer claimed that this was the first instance of complete removal of the epiglottis under suspension. Dr. Arrowsmith thought that he had anticipated Dr. Mayer by complete removal of the epiglottis under suspension for *tuberculosis* some time previously. He found by referring to his records that his operation was two weeks *later* than Dr. Mayer's. He would like, however, to claim priority for the first complete removal of the epiglottis under suspension for tuberculosis.

Cervical Gangrene Complicating Ludwig's Angina. DR. IRVING N. VOORHEES.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

January 24, 1917.

Dr. Duncan Macpherson, Chairman.

Patient Showing Result of Operation for Congenital Atresia of Left Choana. Dr. Gerhard H. Cocks.

The patient, a boy fifteen years of age, has never been able to breathe through the left nostril. At birth, the obstetrician experienced considerable difficulty in establishing respiration. The nasal obstruction is absolute. Fluids syringed into the left nostril fail to enter the nasopharynx.

Since an attack of measles when six years old, the patient has had a chronic discharge from the right ear, the drum showing a small central perforation. Occasionally the discharge ceases for a time.

The boy first came under observation in September, 1916. He stated that he had visited a doctor six months before, who removed the left inferior turbinate bone and encountered a bony plate obstructing the left choana. Examination at the New York Eye and Ear Infirmary showed a bony partition completely occluding the posterior opening of the left nostril. This was easy to see because the inferior turbinate had been removed by the family physician. On posterior rhinoscopy, the posterior edge of the left middle turbinate could be seen to the upper and outer side of the bony plate which filled in the remainder of the choana. In addition there were present hypertrophied tonsils and adenoids, and a bad deflection of the septum to the left.

Under ether anesthesia, with a metal protector passed through the mouth into the nasopharynx to protect the posterior pharyngeal wall and Eustachian tube, the bony septum was bored out with a dental drill, using a Myles' antrum burr fitted with a long shank. In order to obtain more room, the posterior portion of the vomer was removed with a curved tonsil punch, working through the mouth. Subsequently the adenoids and tonsils were operated upon, and later a submucous operation was performed.

The post-operative treatment consisted in keeping the nose clean. Bougies were not employed. For almost four months the hole in the bony plate has remained open, and has not contracted down nor filled in with granulations.

A comparison of the breathing space in the two nostrils, made with the speaker's metallic mirror, is here shown. The members of the Section will note that the breathing is apparently as good on the operated side as upon the sound side. At present the ear is dry.

DISCUSSION.

Dr. Harmon Smith, referring to Dr. Cocks' case, said that he has seen three cases of congenital atresia of the nasopharynx. The first of them a number of years ago. In this case the patient was a boy, and the entire right nostril was filled with bony tissue. By operating he was enabled to give the boy breathing space in his nose. The patient has since married and has two children, but suffers with bronchial asthma and that side of the nose operated upon still fills up with scabby secretions.

The second case was seen in consultation with Dr. Mackenty. Dr. Mackenty followed up this case for some years, but the ultimate contraction brought it down to the point where there was about the same breathing space left, as is shown in Dr. Cocks' case at the present moment.

The third case was that of a little girl who came to the Manhattan Eye and Ear Hospital a few years ago with an obstruction, partly bony and partly membranous. In this case the opening was cut through with a good result.

Dr. Smyth said that he had had a case last summer with complete congenital bony obstruction of the nostril, which was discovered with a posterior mirror examination. Under cocain, and with his finger in the post-nasal space as a protection, he succeeded in getting a fair opening, about the size of that shown in Dr. Cocks' patient. She was told to return if she did not breathe easily, but she is still doing very well. In that case the right nostril was improperly developed, and was not the same size as that on the left.

Dr. Coffin said that he had treated a case a short time ago, which Dr. Harris would recall, in which there was a complete bony occlusion. It was opened up originally with a Myles antrum punch. After this, the opening was enlarged by means of a punch forceps. It had a great tendency to close up, as has an opening through the inferior meatus into the antrum. Tampons were drawn into it having a string attached, which made insertion easy. This was continued for some time. The last time he saw this patient, she was breathing through the nose, but, as Dr. Smith had said of his patient, she was troubled with the nose filling with secretions.

Empyema of the Ethmoid and Frontal Sinus, With Perforation Into the Orbit; Staphylococcus Aureus Infection; Operation; Recovery. Dr. Thomas J. Harris.

The patient is a young man, sixteen years of age, and was first seen five weeks ago. At that time, his left eye was completely closed; there was a phlegmon of the upper and lower lids, the involvement extending to the right eye. His temperature was 102.2° at two o'clock, and at four o'clock it had gone up to 105.2°. There was a copious discharge of pus from the nose, and exquisite tenderness over the left frontal bone as far as the median line and down that side of the nose. A diagnosis was made of ethmoidal and frontal empyema, with probable involvement of the orbit. There was no exophthalmous and no turning out of the eyeball.

The patient was operated upon the next day. The usual incision was made over the eyebrow, and pus was found under the periostum. The frontal sinus was full of pus; the mucous membrane was entirely gone. The ethmoidal sinus was exenterated intra-nasally and found to be badly diseased. A perforation was sought for and finally found on the inner wall of the orbit back toward the sphenoid, where was seen the same appearance as in the frontal bone—distinct evidence of necrosis, the area being approximately a centimetre in each direction.

The diseased bone was removed and the wound drained by gauze strips at the first dressing, carried from the orbit out of the nose. The boy when first seen was semi-comatose, and there were suggestions that the disease had involved the meninges, although there were no pronounced symptoms. An x-ray taken two days afterward confirmed the clinical diagnosis, and a specimen from the nose showed staphylococcus aureus; the same organism was found in the nostrils where there was a little pus, and also in a pure culture from the blood. On the day of admission there was a leucocytosis of 33,000 with 84 per cent of polynuclears; this dropped after the operation, but stood high for a number of days. The temperature remained around 105° for fully a week. On the third or fourth day he was given an autogenous vaccine, repeated in three days, and again three days later. After the first inoculation, the temperature dropped, and he steadily improved, until he attained the appearance shown to-night.

The frontal sinus is perfectly clean; the large area on the orbit has filled in, and while there is still some secretion in the nose, the patient says that he blows it very easily and very little, and there is nothing to be gotten out by irrigation. The case seemed to be of interest, for while a chronic perforation is very common, an acute perforation is rare. Hajak speaks of only one case which he had seen, in which there was an acute perforation. His explanation seems logical,—that there has been at some previous time an inflammation of the ethmoid with a formation of polypi and hypertrophied tissue, followed by another infection and discharge, and a breaking through into the orbit.

Dr. Harris said he did not wish to give the impression that this was an acute ethmoiditis. It was undoubtedly an acute exacerbation of a chronic case.

DISCUSSION.

Dr. Cocks said that Dr. Harris' patient showed the good result of his skill and careful attention. Dr. Cocks felt, however, that the technique employed for the radical operation was neither the safest nor the best for use in such a case. In the first place, the incision made by the operator should have been carried down on the side of the nose to the level of the floor of the orbit in order to exenterate the ethmoid cells. Dr. Cocks considered it both unsafe and unwise to attempt to remove the ethmoid labyrinth by the intranasal method under general anesthesia, when the same object can be accomplished much more safely and thoroughly by the external route.

Dr. Coffin said he had asked that the patient wait for a few moments as he wished to ask some questions that might be mooted. The external incision in Dr. Harris' case did not extend downward as far as the inner canthus of the eye, and that therefore he could not understand how one could make out an orbital perforation "well back toward the sphenoid." He thought Dr. Harris had made a lapsus lingua. Dr. Harris had probably saved the patient's life. Dr. Coffin agreed with Dr. Cocks that once the patient was under ether the exenteration of the ethmoid could be done more thoroughly and more safely. Apparently there has been a considerable epidemic of the staphylococcus aureus infection recently. In the Manhattan Eye, Ear, and Throat Hospital there were no less than six cases yesterday of orbital cellulitis, all due to this same organism.

Dr. Smith said that he had a case similar to Dr. Harris' which he intended to report later, which emphasized the virulence and the rapidity with which the staphylococcus aureus acts. This organism is causing considerable disturbance this winter, more than he had ever before observed.

Dr. McCoy said that at the New York Eye and Ear Infirmary the majority of the cases that he had seen were of this type. Many of them come to the eye service, but the majority of them have temperature if the pus discharge is shut off from the nose. Polypi and granulations form in the nose in these cases and shut off the discharge, and there is always more or less temperature reaction.

Referring to Dr. Harris' case, he said that he had seen another patient who was operated in a similar manner. The bad feature of that type of operation is that it is difficult to remove the ethmoid cells completely without taking away the vertical plate of the maxillary bone and completely exenterating the cells. The case to which he himself had referred was first seen by him two or three months after the operation. The patient was a boy ten years old. He was still draining pus from the nose and had developed a swelling at the hair margin. An incision was made and a probe passed down to the dura, and passed into the frontal sinus, which was still draining. The patient had an epidural abscess which came out on the forehead, and eventually he developed a brain abscess. Although the patient which Dr. Harris had presented looked very well at present, the bad feature of this procedure is that the ethmoid cells are not completely removed, that there is not good drainage, and there is apt to be trouble later on.

Dr. Harris said that Dr. Cocks' criticism was a just one, and that he had rather anticipated that that question would be raised. The case presented a number of interesting features, and the point which had been chiefly under discussion was probably the most interesting one. His decision, however, had been made after due consideration. It goes without saying that the method referred to by Dr. Cocks is the usual procedure of choice and the one that permits the removal on the anterior cells in the best manner. In this case, though, the boy was in a critical state, and it was felt that every moment was worth saving and the attempt was made to get good drainage as rapidly as possible. Following that line, the frontal sinus was first cleaned out, then a hurried search was made for the perforation, which was not found; then the ethmoid cells were opened, and then another search was made for the opening. One matter was a question of judgment; the other, the point raised by Dr. Coffin, was a matter of fact. There was no question but that the perforation was there, and that it was seen as described. It is only a question of the wisdom, even under the circumstances mentioned, of not doing the usual external exenteration. It might have been wiser to have done the operation that way, but he had stated his reasons for departing from the usual procedure. Dr. Harris said he hoped the fate of his patient would not be that mentioned by Dr. McCoy; but he would follow the case and report the eventual outcome, whether favorable or otherwise.

Dr. MacPherson said that he was present at the operation and his impression was that the perforation was lower down towards the nasal process of the superior maxilla. One of the points that he thought of was that it had broken through, being an acute case and occurring in an adult; but he could not state exactly where the perforation was. The rupture had taken place into the orbit.

Dr. Harris said that the perforation was very thoroughly exposed and all engaged saw it. Retractors were put in, and there was a careful and thorough dissection; the eyeball was thrown well out of position, and they simply hunted for the perforation until it was found.

Dr. Norton Wilson said that he could not understand the direction from which the perforation was seen. Was it seen through the orbit?

Dr. MacPherson, replying to an inquiry from Dr. Wilson, said that he placed the perforation low down towards the articulation of the nasal process of the superior maxilla with the ethmoid.

Gumma of the Pharynx, Laryngo-pharynx and Epiglottis—Gumma of Epiglottis—Gumma of Interarytenoid Space. Dr. Harmon Smith.

(To be published in subsequent issues of The Laryngoscope.)

DISCUSSION.

Dr. Lederman said he had seen a number of these pharyngeal and laryngeal cases of doubtful diagnosis, and that in private practice it is exceedingly difficult at times to reach a correct diagnosis in regard to them. In one instance, a young man about thirty-five years of age presented himself, claiming that he was hoarse after using his voice considerably at election time. He complained of nothing but hoarseness, and on examination no lesion was observed in the pharynx; but on using the mirror there was noted a marked infiltration and ulceration of the epiglottis, resembling a tuberculous condition,—the peculiar moth-eaten appearance of a tubercular ulceration. He was closely questioned, but absolutely denied any specific history. Examinations of the sputum were made, with negative results, and the fact that in spite of the extensive involvement he did not complain of pain on swallowing, and that he was reluctant in giving a history, strengthened the suspicion that the condition was of specific origin. After a number of visits, he admitted that he had been infected a number of years ago, and had received mercurial inunctions. The condition cleared up under specific treatment, administered internally and locally.

Another patient, male, fifty-five years old, complained of hoarseness without pain; he gave no definite history of having had any symptoms of specific disease, and doubted that he had ever had. He was kept under observation for several weeks. The infiltration involved the true and false cords on the right side. The question arose whether it was a gumatous or a malignant growth. The patient had received some injections of enesol before coming under observation and had also had some treatment internally. Dr. Lederman said he was suspicious of the condition being of specific origin, in spite of the indefinite history and a negative Wassermann. Two other laryngologists saw the patient and they concluded that he was suffering from epithelioma of the larynx. He was also seen by a surgeon with considerable laryngeal experience, and with the history and the report that there was no evidence of its being of specific origin, either by test or local aspect, he advised a hemilaryngectomy. It was decided to put the patient on a mild treatment of iodid of potassium for further observation. In six weeks the entire mass disappeared and the man is still well. Here was a case that almost had part of the larynx removed, and notwithstanding the fact that he had had several injections of an arsenical preparation without effect, the condition cleared up under a mild iodid treatment. This experience emphasized the difficulty that is confronted in reaching a diagnosis in these doubtful conditions.

Dr. McCoy said that he wished to corroborate Dr. Lederman's remarks. Under ordinary circumstances one would think it would be easy to diagnose syphilis or tuberculosis in the larynx. He himself had so thought until recently, when he had a patient who had been referred to him for hoarseness, following a lesion of the vocal cord. Examination revealed an indentation at the base of the right vocal, which was apparently a healed lesion with a roughened surface. His voice was husky, and the question was whether it could be improved or whether it would be apt to get worse. Dr. McCoy said he told the man he did not think it could be improved by local treatment, but as for its getting worse, it had better be watched from time to time. Upon being asked whether he had had any specific treatment, the man replied in the affirmative and said that he had been cured. A Wassermann test was made and proved negative. That was in March. The man was told to report from time to time, and he was under observation for six months. In the early part of October he came in one day and said that his voice was considerably worse, and examination revealed an edema around the original lesion. He was advised to have another Wassermann made and to have his lungs examined, and the sputum examined,—all of which he neglected for a month. When he at last returned, there was considerable edema around the arytenoid, and he was again told that it was important to have his lungs examined. This he finally did, but both lungs and sputum were negative; but a Wassermann was four plus. The appearance of the lesion was not that of a syphilitic condition, being paler and more like a tubercular infiltration, but with the negative signs for tuberculosis and the positive signs in the blood, he was placed on salvarsan and mercury. He ran along for a while and lost weight steadily,—about 20 pounds inside of six weeks. The infiltration got worse instead of better, and finally another examination of the lungs and sputum was made, and they were again pronounced negative. Dr. McCoy said he then suggested taking a section of the infiltration, which was done, and the section proved the condition to be a tuberculous infiltration of the larynx. This man had had both syphilis and tuberculosis, but had so little evidence in his chest and sputum, that in the presence of the four plus Wassermann they were led astray. He has since gone away and is now recovering.

Dr. Imperatori said that at Riverside Hospital he had seen many cases of four plus Wassermann, in tubercular cases, where the administration of salvarsan proved absolutely negative.

Dr. McCoy said that the salvarsan was given for the effect on the infiltration.

Dr. Imperatori said that some tubercular patients showed a four plus Wassermann and had received several doses of salvarsan. But in so far as any result upon the lesions in the throat was concerned which were assumed to be syphilitic, there was none.

Dr. Wilson asked if he was correct in understanding the Secretary to say that a patient with a four plus Wassermann would get no benefit from his injections.

Dr. Imperatori replied that he would not say that but these patients go on from bad to worse, and all those patients that had received salvarsan injections had died.

Replying to an inquiry from Dr. Carter as to whether there was any intercurrent disease, Dr. Imperatori said, that the cases at Riverside were forced in cases and were positively tubercular.

Those cases that gave a four plus Wassermann and had throat lesions, usually died within a few months.

Dr. Lederman asked if this was a late occurrence.

Dr. Imperatori replied that his last service at Riverside was from December tc May, 1916.

During the present service he had two cases, but had not given them salvarsan.

Dr. Harmon Smith said that the idea that syphilitic involvement of the larynx is invariably unassociated with pain is fallacious. He had seen a perichrondritis of the epiglottis and arytenoids give the patient considerable pain. The only one of these cases that gave positive evidence of tuberculosis was the patient from Otisville with granuloma of the arytenoid space. She had had no pain and still has tuberculosis. She had received salvarsan treatment and it may be possible later to draw some valuable conclusions from the case. She had a Wassermann four plus and tuberculosis apparently a healed lesion, but she had previously shown the presence of tubercle bacilli and had been dismissed as a cured or arrested case.

Necrosis of the Thyroid Cartilage. Dr. Kernan.

This patient came to Dr. Chappell's clinic at the Manhattan Eye, Ear and Throat Hospital nine months ago, with the history that nearly a year previously she had swallowed a chicken bone which became stuck in her throat. It was removed the same day. She stated that she had considerable pain at the time of the removal. The next day she had lost her voice, and up to the time of her appearance she had been able to speak only in a whisper. She also suffered considerably from dyspnoea.

When she came to the hospital, examination showed great swelling about both arytenoids, and of both ventricular bands and aryteno-epiglottic folds. On the dorsal surface of the left arytenoid was a sinus discharging pus.

The patient was at once tracheotomized. A few days after, under suspension, the sinus was curetted. This resulted in no improvement. Under general anesthesia, the sinus was again probed, and the probe reached bare, rough cartilage on the inner surface of the left wing of the thyroid. An extensive incision was then made through the cartilage into the sinus where lay the point of the probe: The sinus was followed up and was found to lead across the front of the larynx to the dorsal border of the right wing of the thyroid cartilage, where it ended in a blind pocket at the bottom of which was a loose piece of cartilage. All the cartilage overlying the sinus was removed and the granulations scraped away. The internal opening of the sinus healed promptly. An external sinus persisted for a month at the right end of the external incision, but was finally healed by injections of bismuth paste.

Her voice returned on the removal of the tracheotomy tubé, three months after her first visit to the hospital. The explanation of the trouble seems to be that at the time of the removal of the chicken bone, nine months before she came under observation, an injury to the dorsal border of the right wing of the thyroid cartilage, resulted in a perichondritis, with abscess formation. The abscess burrowed beneath the mucous membrane on the inner surface of the thyroid, and finally discharged in the neighborhood of the left arytenoid.

It is not certain whether the specimen presented is a sequestrum or a piece of cartilage torn from the border of the thyroid by the forceps of the original operator. The mere suggestion of this seems to emphasize Dr. Jackson's warning that in removing foreign bodies one should always see what the forceps have hold of.

Luetic Paralysis of the Right Vocal Cord. Dr. George E. Davis.

(To be published in a subsequent issue of The Laryngoscope.)

DISCUSSION.

Dr. Harmon Smith said that he had been much interested in the case presented by Dr. Davis. In his opinion there had to be some central lesion to create that much paralysis.

Dr. Davis said that probably Dr. Smith had misunderstood him as regards the seat of the etiological lesion of the throat and ear paralysis, as he had stated in presenting the patient that in his opinion the palatal, pharyngeal and laryngeal paralyses were central in origin, but that it was possible that the lesion in the ear could have been peripheral and occurred ten years previously. In other words, even if it is a case of hereditary syphilis the end organs of the eighth nerve may have suffered before the advent of the other paralyses, though the latter were of a central nervous origin.

The question, however, arises whether the *clinical* symptoms recently manifested were the result of an early *anatomical* lesion (cord paralysis) and were initiated by a complication of the palatal-pharyngeal paralyses, or whether the associated paralyses were all recent. As previously stated, when only one cord is paralysed, it may not occasion clinical signs for a long time, and go unnoticed by the patient.

While it is possible the cord lesion may be of long standing and the palatal and pharyngeal lesions of recent date yet it is not probable, and I am strongly inclined to the opinion that the mere association of these paralyses of the larynx and pharynx argues that they are of central origin and their advent contemporaneous with the clinical manifestations.

Report of a Case of Rhinophyma Treated by Decortication and Skin Grafting. Dr. John J. Kernan.

This patient was fifty-five years old, and was an inmate of a state institution. Ten years ago his nose began to grow larger, and this continued to the past summer. A picture presented showed the man's appearance ten years ago—at the beginning of the condition—and another showed the condition in August, 1916, at the end; and still another showed the condition after operation. Dr. Kernan also presented a specimen of the tissue removed from the nose.

The operation consisted of making an incision entirely about the growth, taking care to go through the skin so as to reach the full depth of the pathological tissue. The whole was then skinned off and the whole area grafted with Thiersch grafts. The wound healed up very nicely.

DISCUSSION.

Dr. McCoy told of a similar case seen a couple of years ago, but this patient did not return for exhibition. He had a very extensive growth up to the side of the cheek on both sides. The dissection was made from one side and the graft from the arm put on. A week later the other side was treated similarly. The result was exceedingly good.

Osteoma of the Ethmoid. Dr. Coffin.

This patient had presented herself at the Clinic two days previously and many of those present had seen her. The growth, as could be seen, is very hard and encroaches upon the orbit; it can also be seen in the nostril, where it is equally hard. The patient had been examined a great deal during the day, both in the eye and throat departments and though she said that she felt sick from so much handling, she consented to come to the meeting. Dr. Coffin requested that curiosity to palpate be omitted as much as possible. Dr. Coffin showed x-rays plates of the case and described the findings. They showed a bony growth about the size of a hen's egg, growing from the horizontal plate of the frontal bone, involving the orbit, ethmoids and nasal chamber of the left side. The patient first noticed the growth about eight years ago. It started as a small, hard lump just below the ridge of the eyebrow and grew slowly until the last two years. She has good vision, but some vertical headache. A friend of the patient had stated that at one time, previous to the appearance of the growth, she was hit over the eye by a fist.

DISCUSSION.

Dr. McCoy said that he had seen a somewhat similar case about a year ago. The question in his mind arises whether this is an osteoma or an osteosarcoma. In a case that he had seen a year ago the growth was in the same position, but as he remembered it, it was not so slow a growth. The diagnosis of sarcoma was verified at operation later. It might be well before operation to take a section with that idea in view.

Dr. Coffin replying to Dr. McCoy's suggestion about taking a section before operation said that it would not make any difference, as he would operate in this particular case anyway.

Foreign Body Removed from the Bronchus of a Child. Dr. McCoy.

The patient came with a history of having been chewing some peanuts four weeks previously, and suddenly inhaled some of the material and since that time had had a constant cough. The child had been first taken to an osteopath, who rubbed the chest for four weeks, but as they could not see that the child was getting any better, the patient was brought to Dr. McCoy. Under ether examination, the peanut could be plainly seen. A very thin pair of forceps was then obtained and the peanut was removed. The peanut had swollen so that while it went through the chink of the glottis there was difficulty in getting it out. While it could get through in the first instance, after being bathed in secretions for four weeks it became swollen. The child was suspended, and then with Jackson's thin forceps the foreign body was grasped and brought up to the chink, but it would not come out. The tube was then taken out, and the child inhaled the peanut again. It was again brought up to the cord, only to have the same thing happen once more. The third time the tube was removed quickly and with a hook the peanut was held, while with another hook it was delivered through the vocal cords. It was feared that it would break up, but it came out very nicely. The child had no reaction, went home the next day, and has since been perfectly normal.

DISCUSSION.

Dr. Imperatori said that this was rather an unusual case; for a peanut is considered one of the most dangerous types of foreign bodies one has to deal with. It was unusual, in that it had remained in the bronchus or trachea over a month and had apparently produced no irritation. He knew of three cases of unremoved peanuts that had caused death within five days after their entrance into the tracheobronchial tree.

Another interesting experience was the case that stimulated the work he had presented before the American Laryngological, Rhinological and Otological Association last May.

One was tempted to use too large a bronchoscope and when placed in the bronchus and pushed down a dilating effect is produced. As a rule, when this dilating effect of the bronchoscope is produced in the human, we are made aware of this effect by the individual, even when under an anesthetic, either breathing more rapidly or taking deeper inspirations. In animals the effect of pushing a bronchoscope into the smaller bronchi is to immediately show inhibitory influences in the carotid tracings. These vagal beats, as shown in the tracings, are manifested as soon as the bronchoscope touches the carina trachea. When the smaller bronchi are dilated they are very pronounced.

It may be possible, that some of the fatal cases during bronchoscopy are due to cardio-respiratory inhibition, to traumatism, acute pneumothorax or plueral shock.

Dr. Carter asked how Dr. McCoy managed to handle the peanut so delicately as not to break it.

Dr. McCoy said that he did not know whether the peanut that had been swallowed was raw or roasted, and he had expected to have a great deal of difficulty. When he put the hook below to get it up to the glottis a small piece broke off, which he was able to get out with the suction tube. Why it did not break more, he could not say, excepting that it was manipulated with great care and delicacy. Jackson's forceps, as all knew, was very thin, almost like a wire, and has two very fine prongs, and if the foreign body is caught delicately with them it can be pulled along with little trouble. While the specimen did not look very much like a peanut, it could be nothing else. It was certainly a very interesting piece of work to get it up and get it out.

Dr. Wilson asked if it was not possible to get the peanut out with the suction apparatus.

Dr. McCoy replied in the negative.

Dr. Forbes said that the most interesting point was the method of removing the object, which was that of combined suspension and bronchoscopy. The second point was the length of time during which the peanut had been in the bronchus, and its comparative non-friability. The third point, which he could not quite understand was why, even with the most delicate forceps and careful manipulation in bringing it up, it was not broken. In an another, recent case, only a few days before, where the peanut had been in the bronchus only three days, it broke into a number of pieces and most of it was removed by suction, some by the forceps. Dr. Jackson claims that with the suspension apparatus and the bronchoscope it is impossible to move the neck at the right angle to look down into the smaller bronchi, in fact an object of this size could hardly have been very far down in the bronchus with a child of four years old. If it had been in the main bronchus, it would have been easy to see it with combined suspension and bronchoscopy; but otherwise, Dr. Forbes said he did not see how the angulation could have been such that Dr. McCoy touched it. It would be interesting to know the size of the tube used.

Dr. McCoy replied that he had used the 4 tube the first time, and the 5 tube the second time.

Two Cases of Foreign Body Removed from the Esophagus. Presented by Dr. Pratt for Dr. Coakley.

1. Tooth Plate Removed from the Esophagus.

The specimen consists of a solid rubber plate with three teeth on it, and also a wire ring attached to the plate for the purpose of fastening it to the teeth.

The patient, a woman thirty-four years old, came into Bellevue Hospital on January 12, and gave the history that four and one-half hours earlier, while eating, the plate became detached and she accidently swallowed it. She was rather excited and hysterical, but seemed more concerned by the fact that she did not have money enough to purchase another plate than that the plate was in her esophagus. She was at once sent for a radiograph and through some mistake was given a Bismuth meal. When we were ready to examine the patient the radiographer reported that there was no foreign body to be seen in the plates, but that the entire esophagus was beautifully outlined with bismuth. She was then fluoroscoped and the plate very plainly seen lying almost transversely across the esophagus, just below the cricoid. She was then radiographed a second time, the bismuth having been absorbed by this time. (The plates were shown.)

Chloroform anesthesia was given and a Mosher No. 9 esophagoscope was passed. The object was seen about eleven inches from the gums, lying almost transversely with only the three teeth presenting. An attempt was made to grasp it with the alligator forceps, but owing to the thickness of the plate this could not be done. A blunt hook was then passed down to the left and the plate gradually turned until the wire ring presented. This was seized and the plate easily withdrawn.

2. Chicken Bone Removed from the Esophagus.

This patient came in the following day. He is a man fifty-four years old who, twenty hours before operation, while eating chicken soup, swallowed a bone. He was admitted on a Saturday night and no radiograph could be obtained. A Mosher 13-inch tube was passed and the bone seen about thirteen inches from the teeth. It was nearly square in shape, sharply pointed on three corners and somewhat rounded on the other. It was very firmly wedged in place and required a considerable amount of manipulation to remove it. No anesthesia was used, except a four per cent cocain sprayed into the throat.

DISCUSSION.

Dr. McCoy said that these were very interesting cases and asked if there was an inflammatory reaction in either case.

Dr. Pratt replied in the negative, stating that both were very recent cases, one of only four, and the other of twenty hours standing. In the second case the man first went to his family physician, complaining at that time of pain in the region of the cricoid. The family physician passed a stomach tube, after which the patient complained of the pain in the mid-sternal region.

Dr. McCoy said that he had had a case a month ago in which the patient gave a history of eating chicken fricassee and swallowing a piece of bone, which gave pain in the esophagus, and after twenty-four hours she could not swallow food or even drink water. She carried it around for three days, and was finally sent to him. On passing the esophagoscope it went to the level of the sternum and there encountered an obstruction. The whole of the esophagus was much inflamed and on reaching the point where the bone had stuck, a half dram of pus was discharged. The foreign body had become jammed in and formed a localized abscess which had closed over the esophagus entirely. After emptying out the pus, a chicken bone ¾x⅛ of an inch was found, and removed. The patient went home all right.

Dr. Imperatori said that last year he saw a case similar to that of the tooth-plate case of Dr. Coakley's presented by Dr. Pratt.

The patient, a foreigner, had swallowed a tooth-plate some forty-eight hours previously. The family physician made an attempt to dislodge the foreign body by the use of the umbrella probang, but this procedure was unsuccessful.

Using the Bruenings tube, a foreign body was localized 26 c.m. from the teeth. An attempt was made to rotate the plate, using the Jackson rotating forceps and the Mosher esophagoscope. The plate was so fixed in the tissue of the esophagus, that it was considered a dangerous procedure.

Finally with a strong cutter, the plate was broken in three pieces and these were removed very easily.

The only thing to be regretted was that the patient insisted on keeping the fragments, and so the specimen was lost. This case was done under local anesthesia.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Meeting of February 6, 1917.

Extra-dural Abscess of the Anterior Inferior Part of the Middle Fossa Secondary to a Simple Mastoid Operation.

Dr. J. Clarence Keeler presented the notes on a case, Charles M., age 24, single, who on January 1, 1914, following exposure, developed coryza and right earache. Pain was relieved on the fourth day by spontaneous rupture of the drum, followed by a blood-streaked discharge.

When seen twelve days later, the right ear protruded. The mastoid was red, swollen, edematous and very tender. There was profuse aural discharge. There was drooping of the superior and posterior wall. The mastoid was opened and pus found throughout. The cells were exenterated, free drainage established and the wound closed in the usual manner. An apparently uninterrupted recovery followed and the patient was discharged during the third week.

Four weeks later he was readmitted to the hospital with swelling over the right mastoid extending over the temporal region and face. There was edema of the lids partly closing the eye. Temperature, 102; pulse, 110; respirations, 27.

The mastoid was reopened. The incision was continued to the front of the ear along the zygomatic bar near to the outer angle of the lids. The zygomatic cells were unusually large and filled with pus. A large abscess was found in the temporal and zygomatic fossae which had eroded through the cranium and exposed the dura of the anterior part of the middle fossa protected by granulations. The pus was evacuated, drainage instituted and the wound closed. A rapid and uneventful recovery followed. Culture showed the pus to be pneumococcic.

Septic Thrombosis of the Mastoid Emissary Vein Secondary to Simple Mastoid and Metastatic Abscess.

Dr. J. Clarence Keeler presented the notes on Miss Lena K., age 21, who in December, 1915, developed severe pain of sudden onset in the left ear. The tympanic membrane was red and bulging. After free incision of the drum under local anesthesia, a mixture of blood and pus was extracted by suction. The discharge continued. The pain increased. A simple mastoid operation was performed, revealing large cells over a wide area, so extensively necrosed and pus-filled as to necessitate a transverse incision. The emissary vein was exposed near its junction with the lateral sinus.

On the second day after operation there was a slight chill with rise of temperature to 102.4. A cellulitis developed on the same side of the face. There were more chills and a temperature of 105.4. Leucocytes. 20,000; polynuclear, 75 per cent. The pus culture showed streptococci. A metastatic involvement of the right should and elbow developed.

The wound was reopened. The sinus appeared uninvolved. The emissary vein was found thrombosed. It was ligated and resected, the sinus was opened to encourage free bleeding. The wound was closed by packing. The patient proceeded to a rapid recovery.

Profiting by the observation in this case, he has since ligated the emissary veins in a case of acute bilateral mastoiditis, where they were exposed to trauma.

The location of the emissary vein renders it more susceptible to injury in extensive mastoid necrosis, and a more common focus of infection than has generally been supposed.

Why the End-Results of Some of Submucous Resections are Unsatisfactory.

(To be published in a subsequent issue of THE LARYNGOSCOPE.*)*

Dr. Louis C. Vattier stated that submucous resections have in many cases failed to relieve the symptoms, because the greater portion of the bony septum or perpendicular plate of the ethmoid has not been removed by the operator, thus leaving the area designated by Ballenger "the vicious circle," unrelieved of obstruction to its drainage and aeration. In these cases the secondary operation is made through a high "T"-shaped incision, the procedure being otherwise similar to that used in a primary operation.

In the discussion following, Dr. Robert Ridpath called attention to the necessity of removing the ridge of the vomer, for which he uses a Hajek chisel.

Dr. George Mackenzie called attention to the necessity of seeing that the vestibules are not obstructed by the malposition of the semilunar cartilage.

Epistaxis.

Dr. Charles F. Adams reviewed the common causes of nasal hemorrhage and enumerated the various general and local measures employed in its control. Among the former were mentioned emetine, coagulose and pituitrin hypodermically.

As a local measure the use of the Bernay splint was preferred to gauze packing. Ligation suture was recommended for bleeding from the anterior portion of the septum.

Dr. Hoyt called attention to the use of andrenalin brushed on the septum as a means of locating the source of the hemorrhage. The bleeding point will stand out as a brilliant red point on the blanched mucosa.

Spinal Therapy as Applied to Diseases of the Nose, Throat and Ear.

Dr. Lawrence Simcox endeavored to show the advantages of vertebral adjustments (Spondylo-therapy), as an adjunct to the local treatment of nose, throat and ear conditions. He states that diseases of these organs are associated with subluxations of certain cervical vertebrae, viz.: middle ear disease with that of the fourth cervical, internal ear with the axis or atlas, eye conditions with the third cervical, laryngeal conditions with the sixth cervical, pharyngeal conditions with the lower cervical and mid-dorsal vertebrae.

The theory is that displacements cause pressure on trophic nerve fibers, supplying the organs. These fibers make their exit at the intervertebral foraminae.

He claims that the reduction of these subluxations has a favorable influence on the diseases in question, claiming to have brought about cures in a numer of cited cases. He depends upon palpation for the diagnosis of the subluxation. He urges physicians to familiarize themselves with the teachings so that any of its possible advantages may be utilized in conjunction with such skillful medical measures as may be indicated. This is preferable to having the method exploited as a panacea by irregular practitioners.

Dr. J. Solis Cohen stated there may be a lymph stasis at these openings which manipulation disperses.

SIDNEY L. OLSHO, *Reporter.*

OBITUARY NOTICE.

PROFESSOR FERDINANDO MASSEI, NAPLES, ITALY.

Born, July 25, 1847.

Died, March 7, 1917.

In the death of Massei of Naples, Italian Laryngology has lost its *doyen* and all who knew him have lost a dear and charming friend. For some of the following notes of his career we are indebted to a notice by Dr. Grazzi, in the *Bollettino delle Malattie dell'Orecchio, etc.*

Ferdinando Massei came of a good family in Naples, where he was born, studied and qualified. In the year 1868 he started a *Wanderjahr* through Europe and was much impressed with the importance of laryngology, which was then in its infancy. He decided to devote himself to it and therefore followed the clinics of Mandl and Waldenburg in Germany; Fauvel in Paris, and Morell Mackenzie in London. Returning to Naples at the end of 1869, he started practicing in the specialty he had selected, opening a free dispensary for diseases of the nose and throat, and he soon attracted numerous doctors and students. A few years later the University recognized his course of lectures. In 1882 he was made *Liber Docent,* and from that year until the day of his death at the age of 70 he taught regularly. In a letter in February last, he laments that his clinic was so crowded. He was made Professor in 1902.

After the death of Prof. Cozzolino the chairs of Otology and Laryngology were united and at my last visit to Naples, a few years ago, I found Massei very satisfied in having, at last, a well-equipped clinic.

Massei was a hard worker and a ready writer. He himself founded the *Archivii Italiani di Laringologia* in the year 1880, and remained its director up to the last. We have frequently made abstracts from it in these pages. Besides, he must have himself written more than two hundred articles, and amongst them we recall the following: Peri-tracheal Abscess in Children; Laryngeal Complications of Carcinoma of the Skin; Congenital Laryngeal Stridor; Erysipelas of the Larynx; Treatment of Laryngeal Papillomata *per vias naturales;* and Anesthesia of the Larynx in Recurrent Paralysis. He wrote a treatise on "Diseases of the Nose and Throat," which was translated into German, Spanish and Russian, and is still well worth studying. He was justly proud of his statistics of laryngeal tumors for he doubtless had a larger clinical experience of these than any other laryngologist in Europe.

He held numerous hospital appointments in Naples. He was Superintendent of the Diphtheria Hospital where he was one of the first to employ intubation. Indeed, he was Honorary Consulting Laryngologist to nearly all the hospital of Naples and his services were not merely honorary, as he was always ready to give practical help at almost any hour.

It is not necessary here to enumerate all the learned societies of which he was a member, but it might be recalled that he was one of the founders, and later president of the Società Italiana di Laringologia; Honorary Fellow of the old Laryngological Society of London, and that he was the sole representative of Italy amongst the select ten honorary fellows of the American Laryngological Association.

As he "arrived" early, was a leader of Italian Laryngology and inhabited the largest city in the Peninsula, it is not surprising that he had a very large practice. But he was a generous man and was never happier than when helping the poor. The commercial side of the profession was his last thought and he was fond of saying that the consciousness of work well done was our best reward and that money was only a means for living.

Massei was not only energetic and learned, but his mind was nimble and he had a ready flow of well-chosen words. Hence, he was always welcome at scientific gatherings and many of us had the pleasure of meeting him at the International Medical Congress in Rome or the Otological Congress in Florence. At these congresses he was the more welcome as he was generally accompanied by his charming wife, who possessed so much of the well-known fascination of her country-women that whenever I met her I was reminded of the poet who described the daughters of that sunny land as having

"Gli occhi stellanti e le serene ciglia
La bella bocca angelica, di perle
Piena, e di rose e di dolce parole."

As Dr. Grazzi writes, Massei cannot easily be replaced; he was a genius in his own line and he passes away amidst the admiration and regret of all his colleagues. We venture to transmit the sympathy of his colleagues in this country to his family and to his son, Professor Raffaello Vitto Massei. ST.CLAIR THOMSON.

THE

LARYNGOSCOPE.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

THE TECHNIC OF SUSPENSION IN BRONCHOSCOPY AND ESOPHAGOSCOPY.*

DR. ROBERT CLYDE LYNCH, New Orleans, La.

In my earlier writings and correspondence with my colleagues, I have stated that the use of suspension was not an essential in bronchoscopy or esophagoscopy. I am still of this opinion as regards adult subjects, where the reason for the use of the tubes is not a foreign body impacted in the larynx or just behind the cricoid in the esophagus. In these instances, suspension will facilitate the removal of such a foreign body better than the spatula or the tubes alone. But in children and infants, I have been using the suspension for the purpose of the introduction and manipulation of the tubes with such satisfaction that I feel now that it is becoming a very essential factor in this class of work.

Firstly, infants and young children are the most ideal subjects for suspension because of their natural muscular undevelopment, their flexible necks and because of the short distance from the upper teeth to the larynx.

Secondly, it is in infants and young children that the greater percentage of our foreign body cases occur and it is in these also that we fear most the reactive inflammations and swellings due to our manipulations.

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*Read at the Seventh Annual Session of the Clinical Congress of Surgeons, Philadelphia, October 25, 1916.

It is your experience on occasions, as it has been mine, to remove the foreign body successfully with the bronchoscope, only to be called again to relieve the subglottic edema by a tracheotomy, a most disheartening circumstance.

It is the opinion of the continental Europeans that peroral endoscopy is not practical in infants and young children up to four years of age and that tracheotomy should be done in these cases. One has but to see Jackson at work or to read the American literature to be convinced to the contrary, that peroral endoscopy is the procedure of election in infants and young children, providing one has developed that technique which will permit the passing of the tube through the glottis with the least amount of traumatism, and suspension aids this to the greatest degree.

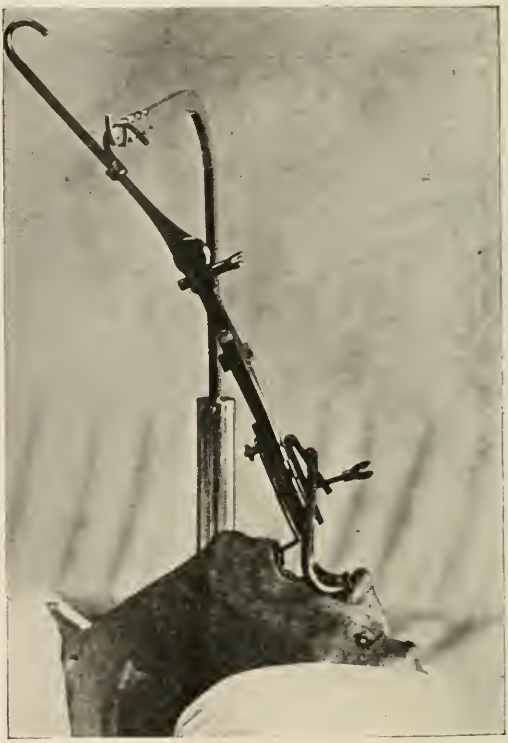

Fig. 1. New position for introduction of bronchoscopy in children and infants.

I also agree most heartily with Jackson in his postulate: no anesthesia in young children and never in infants. If there is one real contraindication to general anesthesia, it would be in the case of a baby with insufflated foreign body which is producing some dyspnea.

For bronchoscopy in infants and young children, the head of the table is not dropped as for the regular technique, it being more convenient to have the table flat. Just sufficient extension by moving the horizontal crane outwards is made to bring the posterior two-thirds of the larynx into view; then the neck is straightened by the elevation of the traveling crane and we have the posterior two-thirds of the larynx well in view, in many instances with the child's head hardly elevated from the table.

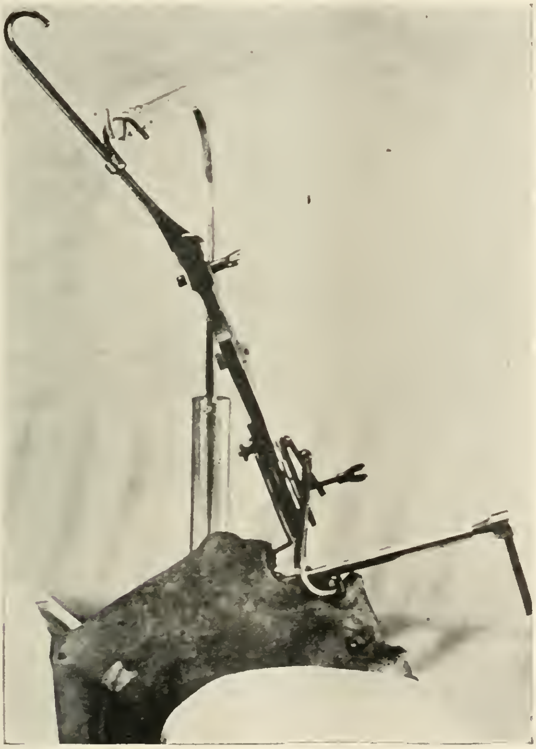

Fig. 2. Introduction of bronchoscope under direct view, protecting all parts from traumatism.

The child patient is prepared by being wrapped firmly in a sheet and the crane so adjusted that we may procure flexion of the head rather than extension, for you will remember that we are not anxious to see the anterior commissure now, but to gain sufficient room for the passage of the tube. One can use a short spatula and follow along the base of the tongue using the tube to elevate the epiglottis, though I much prefer to so introduce the spatula that it picks up the laryngeal face of the epiglottis and brings into view the interior of the larynx. A solution of five per cent cocain is now applied to the upper part of the larynx only, being sure that the trachea receives none of the anesthetic fluid on account of the possibilities of diminishing the cough reflex, nature's only method of ridding the bronchial tree of excessive secretions. The surface of the larynx and vocal cords are next covered with sterile vaseline, to permit the easy passage of the tube.

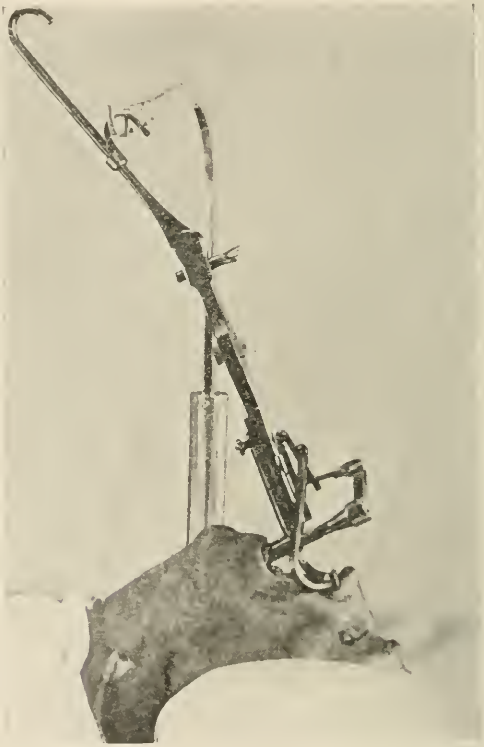

Fig. 3. Bronchoscope in right bronchus showing slight difference in plane scope and instrument.

With the larynx thus before you, prepared in a surgical way for the passage of a tube or any other instrument, it is an easy matter to slip the bronchoscope or esophagoscope into their respective openings without, in the least manner, traumatizing the part.

In infants and young children, one will usually inspect the parts first and in some instances remove the foreign body without other aid. May I report briefly the two following cases to illustrate?

Case 1. Baby, fourteen months old, undersized, under weight, somewhat pale, no dyspnea, but typical foreign body cough. History of insufflation of watermelon seed four weeks ago. Three previous attempts were made at removal by men in an adjoining State. The child was suspended; the seed was seen to be loose in the trachea, elevators were slipped in between the cords to separate them and the child made to cough, when the seed flew out of the mouth. In this instance no tube or other instrument entered below the cords. The child was so well it was returned home the same night.

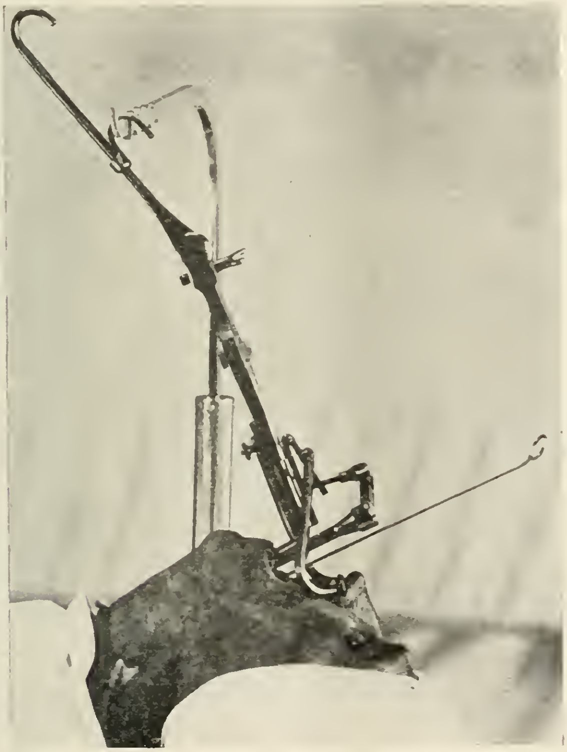

Fig. 4. Bronchoscope in right bronchus; applicator in esophagus.

Case 2. Baby, eleven months old. Insufflated particles of peanut; suspension. Cords separated; mass could be seen in right bronchus, using ordinary head mirror with 100 watt nitrogen lamp for illumination. Forceps were passed down the trachea and a large peanut mass removed. Several smaller pieces were seen on the tracheal wall and deep in the right bronchus. Those on the tracheal wall were removed with the suction tube and that deep in the bronchus, in the same manner but through a bronchoscope.

These will serve to indicate that suspension has rather a special field of its own in foreign body removals in infants and young children and would precede the use of the tubes which again is in the natural order of application.

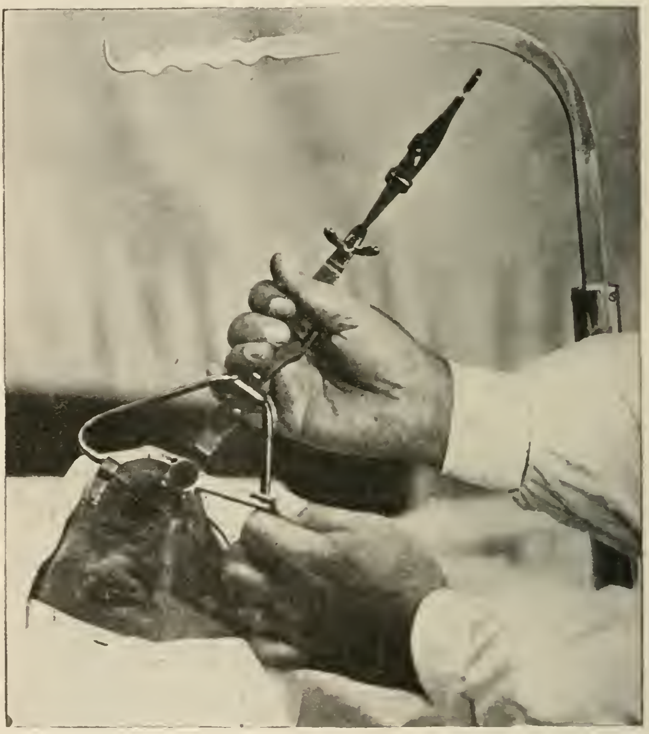

Fig. 5. Dismantling hook. Later tilted to patient's right to remove left tooth plate.

The selection and passage of the bronchoscope is the next step. One has his special preferences in the matter of bronchoscopes, my preference being for the Killian baby set, which to me have these advantages: They are equipped with a hollow, smooth manderin, the blunt, round surface of which will produce no traumatism at all. They give the largest working lumen and can be illuminated with a

Brünnings handle, a Keirstein lamp or, as I frequently do, I use an ordinary head mirror with the strong nitrogen lamp. Grease the tube well, grease the larynx and cords well, separate the cords by the use of an elevator or retractor and pass the tube into the trachea under direct vision without its coming into contact with the subglottic space. Once the tube is passed the vocal cords, the manderin is removed to establish respiration through the tube, then we may proceed along two general plans. If it is probable that the tube will have to be removed and be reintroduced, as in the case of multiple foreign bodies, it will be best to continue the patient in suspension.

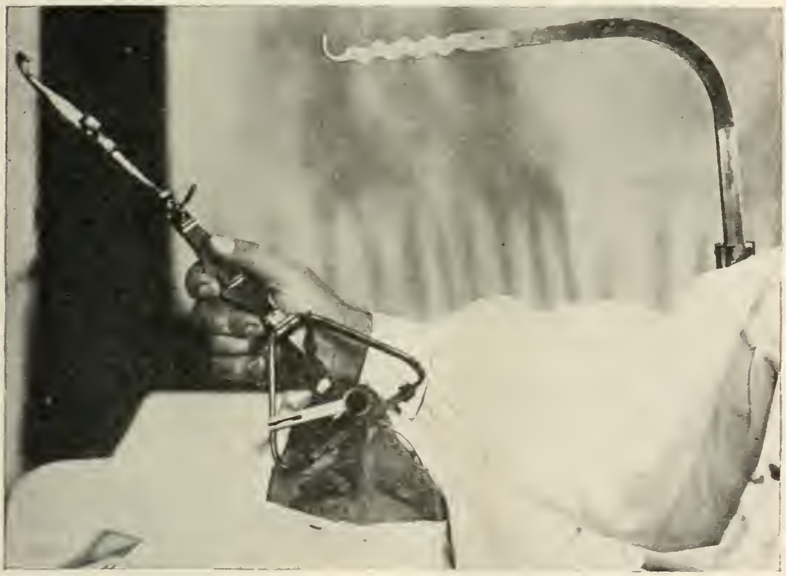

Fig. 6. Hook tilted to left to remove right tooth plate.

By guiding the bronchoscope through the lumen, one will find that it is necessary to flex the head, which can be done by the horizontal movement of the crane and the worm gear joint; one is free to move the scope laterally because of the extra width of the pear-shaped ring. It might be said that the distal end of the tube may be raised or lowered by the vertical movement of the crane. It gives one the impression of adjusting a cannon for fire; one sights through the tube to the normal lumen and path of the bronchus and by moving the traveling crane in its various directions he so aims the tube as to permit its accurate passage through the bronchus.

It might be said that with the child firmly fixed upon the suspension apparatus, it is much less likely to wriggle loose than ordinarily held. One can handle the bronchoscope with much more delicacy by this means than ordinarily; this applies especially to the region of the stem bronchi.

In one of my peanut cases, portions of the hull of the peanut were also inspired and there were three pieces too large to come through the tube. With the suspension apparatus I had no hesitation in withdrawing foreign body and tube because I felt no discomfort about the reintroduction. One does not relish the idea of reintroducing the tube in a baby eleven months old.

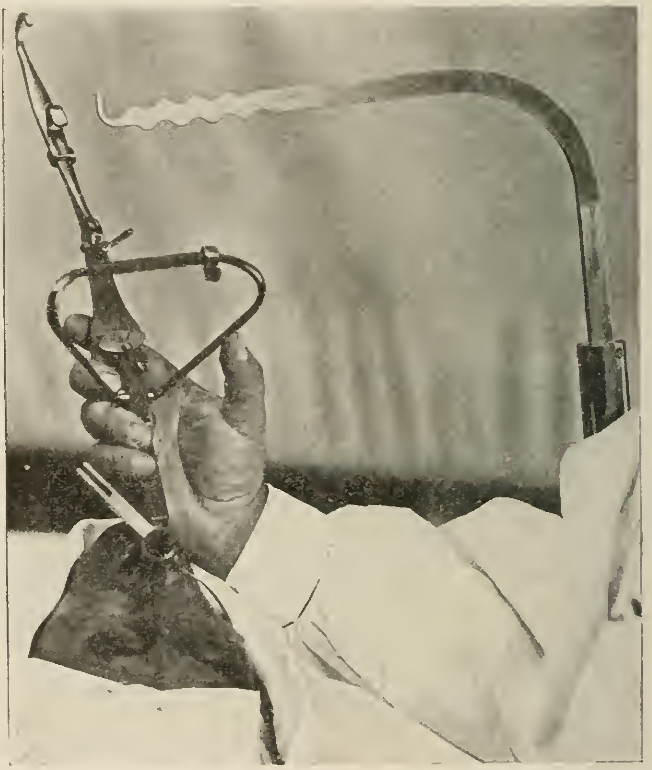

Fig. 7. Elevation of ring out of way of scope.

With suspension, one feels a certain sense of security about respiratory disturbances and that if the tube is withdrawn, it can easily and quickly be reintroduced and if for any reason a tracheotomy should be necessary the patient is in the most ideal position for its quick performance.

If you prefer to use the tube unaided after its passage through the cords, you proceed as follows: The baby tube with the manderin removed is resting in the trachea and respiration is quiet through the tube. The hook is removed from the crane and carefully tilted to the right to permit the removal of the left tooth plate; then the right tooth plate is removed in the same manner. The pear-shaped ring is bent back upon its hinge and the screw holding the spatula is now loosened and the body of the hook is in this way disengaged from the spatula; finally the spatula is removed. One then attaches his illuminating apparatus and proceeds with his bronchoscopy as is usual.

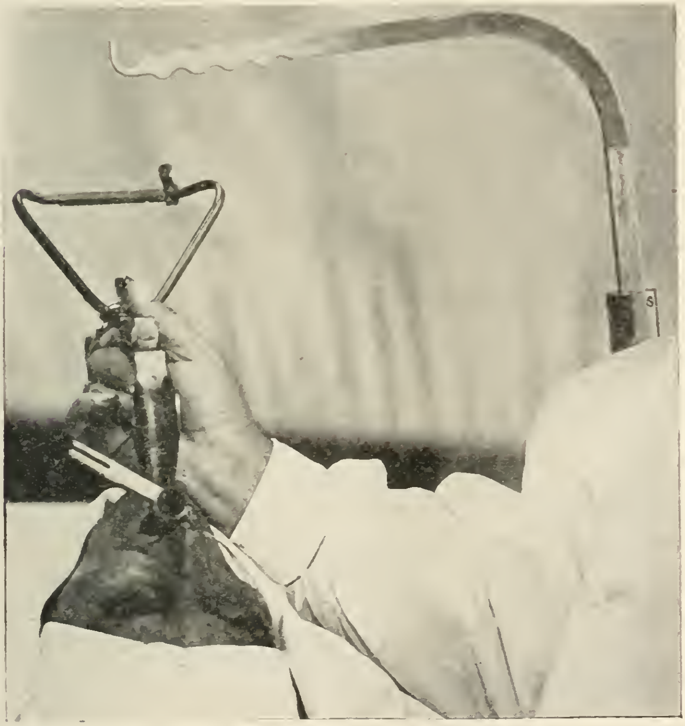

Fig. 8. Removal of spatula.

The introduction of the esophagoscope is such a simple affair under suspension that it seems needless to describe it. The mouth of the esophagus is, in most instances gaping and, an esophagoscope of suitable size will practically fall in. Its further passage through this passage is better managed, in my opinion, without the suspension apparatus and the latter is dismantled as described above.

In the management of an impacted foreign body either in the larynx or in the mouth of the esophagus, no instrument equals the suspension spatula. In the foreign bodies lying behind the cricoid this cartilage may be lifted to a marked degree and space can be gained by hyper extension of the suspension spatula, that is, by tilting the tip of the spatula by movement of the worm gear and by horizontal movement of the crane. By use of either the speculum for separating the cords or an elevator, one may lift the mucous membrane from an impacted point and with the other hand armed with forceps, remove, turn, twist, rotate or fracture the offending mass and remove it without any damage whatever to the mucous membrane. Safety pins are turned, the points are bent in and the body removed easily. Teeth are cut from a false tooth plate, removed, then the plate is cut in two or seesawed out of the esophagus without tearing the mucous membrane.

I show you a straight pin impacted in the larynx of a boy of seven and a safety pin impacted in the esophagus with the point up, removed by this technique as you see from the bent points of both.

Lastly, with suspension you are permitted to treat your surfaces after removal of the offending body.

For instance, in one of the water melon seed cases the body had produced considerable traumatism with the formation of plastic exudates in three locations in the trachea. This exudate was removed, the surface was painted with tincture of benzoin and vaselin applied to these areas as well as to the mucous membrane of the trachea. In one instance, 25 per cent nitrate of silver was applied to a traumatized spot.

I call your attention to the fact that with the aid of suspension, you are not only able to remove these foreign bodies more easily and with less traumatism, but you are permitted to treat what traumatized surfaces occur and practically bandage your wounds thereafter. Just as our colleagues splint their fractures, plaster their joints and protect their abdominal incisions with gauze and adhesive.

634 Maison Blanche Building.

PRIMARY CARCINOMA OF THE MIDDLE-EAR; REPORT OF A CASE.*

Dr. Horace Newhart, Minneapolis, Minn.

Carcinoma of the middle ear, because of its very rare occurrence and extremely bad prognosis, has not been a favorite topic in medical literature. In view of an ever increasing interest in malignant neoplasms and recognizing the successes in other departments of surgery through early diagnosis and aggressive treatment of cancer, a brief presentation of this infrequently described condition, inspired by the observation of a recent case, is of interest at this time.

Primary carcinoma of the middle ear was long regarded as one of the curiosities of medicine. As early as 1886, Kretschmann[1] collected sixteen cases. In 1899, Zeroni[2] reported five cases of carcinoma of the ear, of which, however, three were of the external ear or of the canal. His very exhaustive study of the literature yielded one hundred and twenty-one cases of carcinoma of the ear reported between the years 1804 and 1899. Of these a moderate number were primary middle ear carcinomata.

During twenty-four years Bezold[3] saw but four cases of carcinoma, three of the external ear, and one primary in the middle ear, out of 20,000 otological patients.

Levesque,[4] reporting a case in 1910, says that in all the preceding literature he could find less than fifty authenticated cases. He cites Dupau who estimates that there occurs but one case of malignant disease of the middle ear to every 10,000 cases of chronic otorrhea. Milligan[5], discussing a report of a case by Whitehead, said that in the records of the London Hospital, averaging 200,000 patients per annum for a ten year period, not a single case of carcinoma of the middle ear could be found. For the same period more than thirty cases of malignant disease of the external ear were recorded.

In the literature accessible we have been able to find, since the date of Zeroni's monograph (1899), reports of thirty-four cases of middle ear carcinomata. This includes, however, several mentioned in discussions but not reported *in extenso.*

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*Read before the American Academy of Ophthalmology and Oto-Laryngology, at Memphis, Tenn., December, 1916.

American otological literature on this subject is extremely scanty. All told we have found but eight[6] cases published in the United States.

In order to determine the relative frequency of this disease in America, and the approximate ratio of reported cases to those not reported, we recently sent inquiries to a number of ear specialists throughout the country asking how many proven cases each had seen in his practice or in consultation and how many he had published. Two hundred and forty-seven replies have already been received. One hundred and ninety-two otologists, many of them men of very extensive practice, replied that they had never had a case. Forty-five men returned a total of fifty-one cases, two having each had five cases.** This fact suggests the possibility of a very uneven geographical distribution of the disease. But two of the forty-five cases had been published.

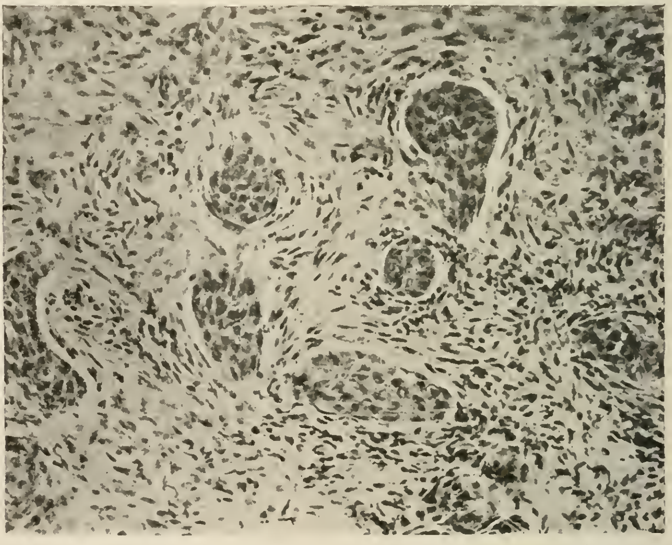

Fig. 1. Hematoxylin and eosin. Photomicrograph of tissue removed by operation. Nests of epithelial cells embedded in dense connective tissue. No epithelial "pearls" are seen. The cells definitely resemble those appearing in the secretions at post-mortem. X 1700.

It is probable that this number represents but a small proportion of all cases which have occurred during the period covered by these observations, many never having come to the attention of a specialist, and many doubtless having died without a correct diagnosis.

While occurring most frequently after the age of forty, Alexander[7] saw a case in a boy of seventeen, Leidler[8] reported one aged seventeen, Nager[9] one at nineteen and Knapp[10] one at twenty.

Both sexes are equally liable to the disease.

Concerning the etiology, the most constant factor which may be regarded as possessing any causal relation is the purulent discharge of a chronic otitis media. This was present in over eighty-five per cent of all cases. Many gave a history of suppuration from infancy or early childhood.

Treitel[11] and Danzinger[12] reported cases which appeared without a previous chronic discharge, but followed closely upon an attack of influenza, with only an acute otitis preceding the symptoms of carcinoma.

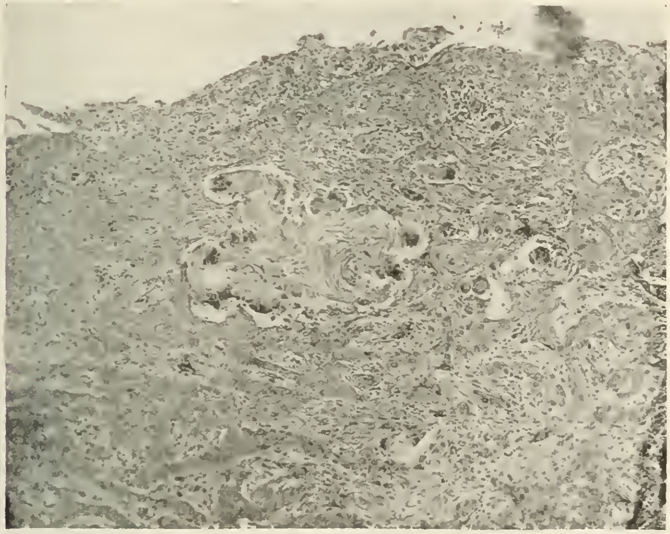

Fig. 2. Hematoxylin and eosin. Microphotograph of section showing dense hyalinization of the epithelial "pearls" with attempt at inclusion by foreign body giant cells. X 750.

A history of trauma from four weeks to nine months before the onset of symptoms was noted in two cases reported by Milligan[13],[14], in one reported by Wilkin[15] and in one case reported by Dalby.[16]

Heredity plays the same role as in carcinoma of other parts of the body.

Of all symptoms, the most constant and usually the earliest, is pain referred to the meatus or to the post-auricular region. Next in frequency is the presence of bleeding granulations in the middle ear or meatus. Facial paralysis occurs relatively early in most cases. Mastoid tenderness and swelling with a superficial ulceration appear in the more advanced stages.

Impairment of hearing is proportional to the amount of involvement of the cochlea, either by direct extension of the carcinomatous process, or through inflammatory changes. In a few cases [Nager[17]

Broeckaert[18]] some degree of hearing was present until within a few days of death, as in the case herewith reported. Symptoms on the part of the static labyrinth may appear at any time during the progress of the disease, but they are frequently very late, for the labyrinthine capsule is especially resistant.

Cachexia is a common characteristic in spite of the fact that there is practically never an involvement of organs which have to do with nutrition. This is explained by the disturbances due to the pain and to the poisons produced by the neoplasm itself.

As to the microscopic pathology, it was found that the cases in which the histological findings were given were epitheliomata of the squamous-celled variety. There was one notable exception in a case described by Lange[19] which proved to be a cylindrical-celled epithelioma.

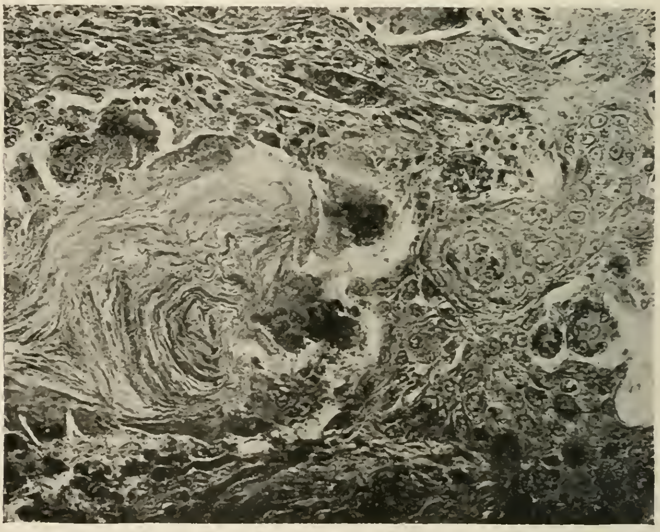

Fig. 3. Hematoxylin and eosin. High power view of same section. X 1700.

The question as to the method of origin has not been settled. The great majority of middle ear carcinomata can be accounted for by the extension into the tympanic cavity of epithelium from the external canal. In consequence of the traumatism to this epithelial tissue by the chemical irritation of a purulent discharge there is evolved a carcinoma. But in those cases which originate in a closed tympanic cavity we must assume a metaplasia of the cylindrical-celled lining membrane into the squamous-celled variety, or conclude that the neoplasm is derived from glandular elements within the cavity[20].

Invasion of the bone takes place from the tympanum and its destruction goes on rapidly with the formation of irregular sequestra. The bone is destroyed partly by pressure and partly by obliteration of its blood supply. The labyrinthine capsule, because of its compactness, is particularly resistant to the new growth. The dura also presents a decided barrier to its extension to the brain. Though covered with the so-called granulations, the dura is frequently found intact upon its inner surface.

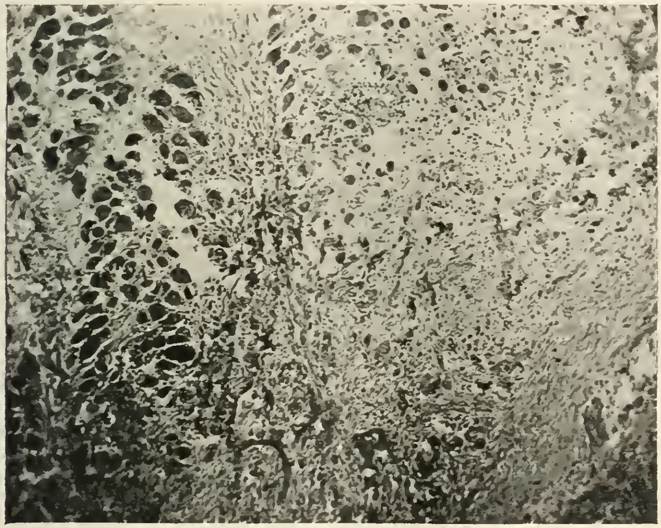

Fig. 4. Hematoxylin and eosin. Groups of epithelial cells invading striated muscle. X 750.

The adjoining lymph glands are enlarged but microscopically they give the picture of an inflammatory reaction with small-celled infiltration. Practically never do they show the presence of carcinoma cells.[21]

With the advance of the new growth, neighboring organs become involved. The parotid gland and mandibular joint are among the first to be invaded. The lateral sinus is not infrequently surrounded by the carcinoma and obliterated, and in advanced cases the meninges, brain, and cranial nerves are attacked.

Metastases to other parts of the body are very unusual. The lungs and mediastinum were found the seat of metastases by Treitel[22] and Lange.[23]

Carcinoma of the middle ear runs a rather rapid course, though its progress is much slower than sarcoma of the same region. In any given case it is impossible to determine the exact duration, for one cannot fix upon the time the neoplasm started. However, the interval from the first symptoms of pain to the time of death is from eight to eighteen months, with one year as the average duration. Death is caused by meningitis, brain abscess, hemorrhage, exhaustion or by the direct extension of the growth to the vital centers.

An early diagnosis can be made only with the microscope. For this reason every aural polyp, especially in persons over forty years of age, should be microscopically examined. Furthermore, all suspicious granulation tissue removed in the course of the radical operation should be carefully scrutinized because of the possibility of malignancy.

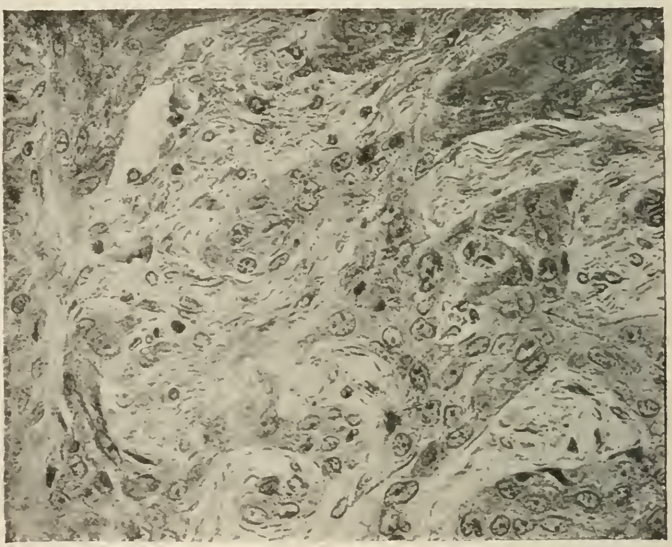

Fig. 5. Hematoxylin and eosin. High power view of morphology and arrangement of epithelial cells with intervening connective tissue. A mitotic figure in center of picture. X 2000.

Radiography of the mastoid region offers large future possibilities as an aid to diagnosis by the early recognition of destruction of bone before the growth has extended far beyond the tympanic cavity.

Luetic disease of the bone must be excluded by the history and by serum diagnosis.

The prognosis is hopeless in all unoperated cases. Stein[24] reported a case in which a polyp was removed with the snare. The microscope proved it to be a carcinoma, but there was no recurrence. Jansen[25] operated a case which lived eight months without recurrence, dying of an intercurrent disease. Whitehead[26] reported a case which showed no recurrence twelve months after operation.

From the non-fatal cases in the literature we must conclude that the prognosis is favorable in proportion to the earliness of the diagnosis and the thoroughness of the operative procedure.

The only effective treatment consists in thorough operation. Some recent writers, including Brindel[27] and Zebrawski[28], advise against all interference. This view, however, is not shared by the majority of otologists. As early as 1898, Heyer[29] successfully resected the temporal bone for a carcinoma primary in the external ear, but with extensive bone involvement.

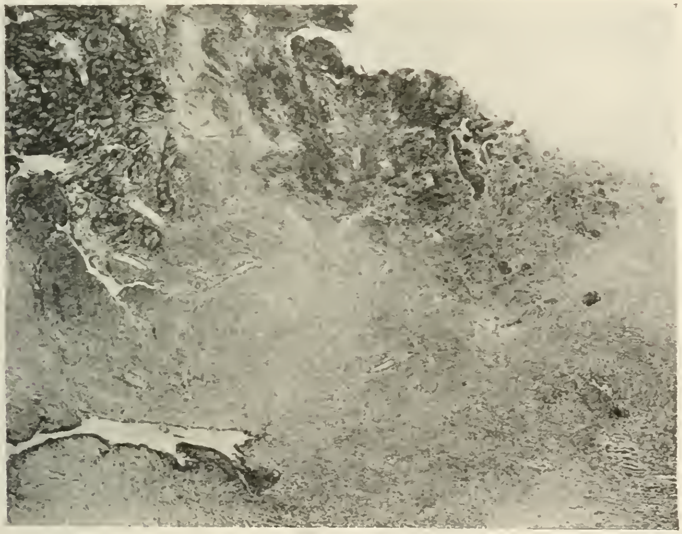

Fig. 6. Hematoxylin and eosin. Low power view of bony trabeculae in one portion of section and masses of epithelial cells in another portion with intervening inflammatory connective tissue. X 35.

Dr. Holinger has recently written us of an unpublished case, the patient aged thirty-eight or forty, operated upon ten years ago and still alive. Dr. Carl L. Larsen, of St. Paul, in November, 1914, operated on a man aged fifty, doing a radical mastoid followed by the actual cautery, and he recently advised us that his patient has had no recurrence. This case has not yet been published.

For the sake of relieving suffering, the considerate surgeon will usually decide to operate in all but the most advanced cases. And the fearless operator, who is so fortunate as to see his case sufficiently early, will operate with some reasonable hope of a successful outcome. We must regard as inoperable those cases in which there is extension within the cranium or into the soft parts of the neck.

Thus far we have been unable to find, either in the literature or through inquiry, any positively successful results from the use of radium or the x-ray in treating carcinoma of the middle ear. Urbantschitsch[30] has recently published a report of several cases of ear diseases successfully treated with radium, including an epithelioma and a sarcoma of the external ear.

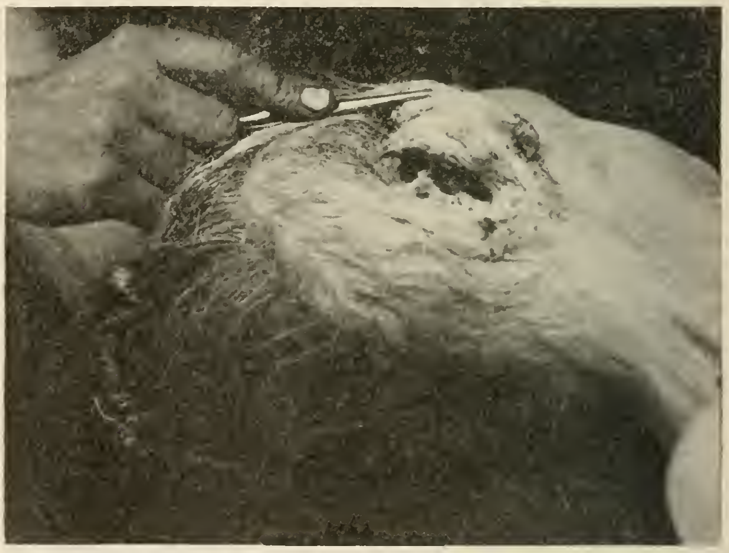

Fig. 7. Post-mortem photograph showing extensive destruction of temporal bone.

Deep Roentgen therapy by improved technic, when employed as an after treatment following operation, promises much for a larger percentage of cures in this disease.

My own case, Mrs. E. C., age 65, was first seen May 12, 1915. She complained of severe pain within the right ear and of an unpleasant discharge with occasional bleeding from the canal.

Family history, negative. No previous ear disease.

Present illness began in January, 1915, with an attack of influenza, when she felt a fullness in the ear, followed by pain which was relieved in a few days by the onset of a discharge. She felt variable pains in the right ear until April 15, when she noticed that the discharge was at times more copious and consisted largely of blood. The pains became more severe, but were relieved for a time by each hemorrhage.

Examination showed a woman well past middle age, somewhat cachectic, extremely restless and worn by pain. Weight, 145 pounds.

The right canal was partly filled with a dark, fetid discharge. The inner fourth of the posterior superior meatal wall was red and slightly swollen. All but the anterior inferior third of the drumhead was destroyed. The ossicles could not be found. Within the tympanic cavity, but not extending into the canal, were dark red, bleeding granulations. The probe revealed exposed bone in the posterior portion of the tympanic cavity. The mastoid showed no swelling or redness, but was tender over the antrum and tip. There were no enlarged cervical or auricular lymph glands.

The left ear was normal.

Hearing distance for the right ear (left ear excluded with the Bàràny apparatus) was ten feet for the voice and two feet for the whisper. Weber lateralized to the right. Rinne negative on the right, positive on the left. No spontaneous nystagmus; fistula test negative.

An immediate radical mastoid operation was advised. The patient was referred to Dr. J. G. Cross for a general examination. He reported a blood pressure of 190, with a chronic nephritis and advised a postponement of the proposed operation.

May 26, we observed a slight facial paresis on the right side involving all three branches. The pains became more intense.

Wassermann was negative. A Roentgenogram made at this time showed extensive destruction of the bone.

Malignancy was suspected and we again urged operation to relieve pain.

May 28. Operation, St. Barnabas Hospital. The primary postauricular incision was attended by excessive bleeding. The knife on cutting through the periosteum plunged deeply into the mastoid, which was filled with highly vascularized granulations interspersed with small irregular sequestra. The large cavity was thoroughly cleansed with the finger and curette. Surrounding the labyrinthine capsule a large sequestrum was found which could not be removed without destruction of the labyrinth. It was therefore left. A small area of dura covered by granulations was exposed over the middle fossa.

A diagnosis of inoperable malignant growth was made. The patient's age and poor physical condition and the involvement of the dura rendered further procedure unwise.

The patient rallied rapidly from the operation and on the second day stated she was entirely free from pain. The facial paresis completely disappeared by the fifth day.

The wound healed rapidly and the patient's general condition improved noticeably as a result of the rest which was now possible.

July 6, the right ear perceived the whisper at eight inches. Weber was lateralized to the right. The course was uneventful until August 3, except for the occasional return of pain and slight hemorrhages on change of dressing.

August 3. Tumor masses appeared deep in the auricular canal. The superior branch of the facial nerve again showed paresis.

August 6. The facial paresis now extended to all three branches. Because of a return of very severe pain a second operation was decided upon. Tested before the operation, the right ear perceived the conversation voice at fourteen inches (exclusion apparatus in left ear).

Second operation August 7, Dr. E. S. Strout, assisting. The original incision was opened. The cavity in the bone had grown and was filled with granulations and sequestra which were removed, except the large movable mass corresponding to the labyrinthine capsule. The facial nerve was found exposed in the cavity for a distance of more than one centimeter. The dura over the middle fossa covered by granulations was exposed over an area with a diameter of nearly two centimeters.

August 8. The patient again rallied promptly from the operation. The pains diminished.

August 10. The C_4 fork and the voice were perceived through the dressings. There was no spontaneous nystagmus and no nausea. Weight 123 pounds.

September 1. The patient left the hospital for a short walk. The pains increased, but were controlled by codein. The cachexia was very noticeable. The facial paralysis was now complete. Patient perceived the loud voice at eight inches, left ear excluded.

September 6. A very severe spontaneous hemorrhage occurred from the canal and the post auricular wound, but was controlled by a firm packing.

The course so far was afebrile. Temperature on this date was 99.2°, pulse 112. The patient being very restless from pain, morphine was necessary for the first time.

September 9. There occurred a very severe hemorrhage on change of dressing. Pulse 158, irregular.

September 12. During the night there was a severe spontaneous hemorrhage. The patient was very weak and delirious.

September 13. Death.

Pathological Examination by Dr. Harold E. Robertson. External examination of the body showed a rather poorly nourished, adult female, 163 cm. in length. Pupils dilated, unequal, the right measuring 7 mm., the left 6 mm. in diameter. Slight general subcutaneous edema. Multiple fine cutaneous hemorrhages in the skin over the left shoulder and to a less extent over the right shoulder and right side of abdomen. Behind the right ear is an excavated ulcer 6.5 cm. in length, 3 cm. in width, and 2.7 cm. at its greatest depth. Its inner surface is covered by a smooth granular membrane from which bony points project and from which on palpation pockets of thick, yellowish pus are discharged. This granular appearing ulcer extends downward toward the parotid gland and also evidently involves the bony parts immediately adjacent to the external auditory canal. The skin of the right side of the face is smoother than that of the left and the right angle of the mouth is slightly depressed.

Internal examination of the body shows advanced degree of arteriosclerosis with chronic diffuse nephritis and fibrous changes in the myocardium. Both tonsils contain thick, yellowish material embedded in the crypts but neither tongue, pharynx, or larynx shows any evidence of tumor or ulcerative processes.

On removing calvarium, the longitudinal sinus fails to show any evidence of thrombosis. On removing brain from skull, on the inside of the dura at the junction of the squamous and petrous portions of the right temporal bone is an oval raised plaque, measuring about 3x2 cm., and corresponding in position to the excavated area described above. This plaque is composed of firm tissue having a slight granular appearance and yellowish tinge, resembling markedly the tissue which lines the entire ulcer. Pieces of dead bone are readily removed from the base of this ulcer and the process is now seen to involve the facial nerve, the right inferior maxillary bone, the posterior portions of the right parotid gland, and the outer portions of the bony labyrinth on the right side. In all of these locations the bones are embedded in a granulation-tissue-like mass which had evidently partially destroyed the periosteum, creating small sequestra during the process. There is no evidence of any involvement of adjacent lymph nodes or of the inner surface of the calvarium or other regions of the neck or face or any portion of the brain.

Microscopic examination of portions of the tissue involved in this ulcerated area shows masses of epithelial cells resembling in arrangement and morphology squamous epithelium. Typical pearl formation is illustrated at several points. Many of these pearls have become definitely hyalinized and are surrounded by nuclei of large giant cells. In other portions these cell nests are extremely active in growth, as indicated by the large proportion of mitotic figures and their invasion of muscle in some areas and in other portions of lobules of the parotid gland.

Examination of the specimen removed at the operation shows cell nests corresponding in every respect, except for the absence of epithelial pearls, with the tissue just described.

The diagnosis in this case is clearly a squamous cell carcinoma. At the post mortem its point of origin could not be definitely determined, but the very marked involvement of the structures of the middle ear strongly suggests this site as the origin of this growth.

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910 Donaldson Building.

A NEW INSTRUMENT AND TECHNIQUE FOR ENUCLEATION OF THE TONSIL.*

Dr. Jacob Braun, New York City.

The operation for enucleation of the tonsil has for its object the complete removal of the gland without injury to the adjacent structures,—the pillars, uvula, palatal arch, muscles, and the fascial aponeurosis. The operation must also be completed in as short a time and with as little hemorrhage, shock, and pain to the patient as possible.[1] The numerous methods for enucleation of the tonsil which have been devised within the past few years, show that the need for a simple, efficient, and safe technique for this most frequent of operations has not been fully met.

At the present time the two methods for enucleation most frequently employed are: First, the guillotine operation, with the instrument modified by Sluder,[2] with additional modifications by others; and, second, the snare operation, in which the tonsil is severed from its attachments by means of a cold wire, after a more or less complete dissection from its bed in the fossa.

The advantages of the Sluder technique are the speed, short anesthesia, the small amount of resulting scar tissue, and the ease with which the operation can be performed when the technique is mastered. Its disadvantages are the considerable primary and the occasional secondary hemorrhage, the greater liability to trauma, due to working by the sense of touch rather than by sight, such injury as buttonholing or removing part of the pillar, laceration of the mucous membrane, removal of part of, or injury to, the intrapharyngeal aponeurosis being not infrequent. Because of the obscured field caused by the free bleeding after removal of the first tonsil, the possibility of injury is greatly increased. Though the hemorrhage is less profuse when the dull Sluder guillotine is employed and the finger or instruments used to complete the separation from the surrounding structures, the trauma and consequent reaction are markedly increased.

In favor of the snare operation chiefly is the greatly diminished hemorrhage, the result of crushing through the pedicle

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*Presented by invitation before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 28, 1917.

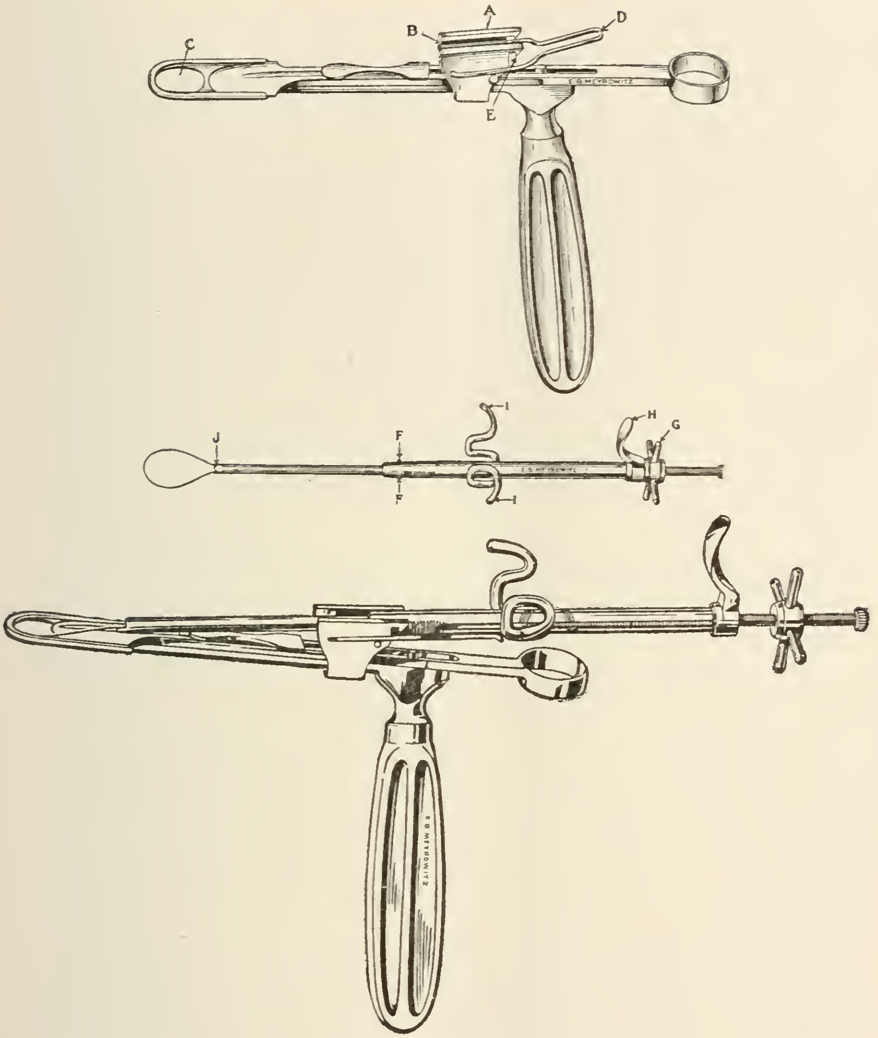

Fig. 1. Snaretome.

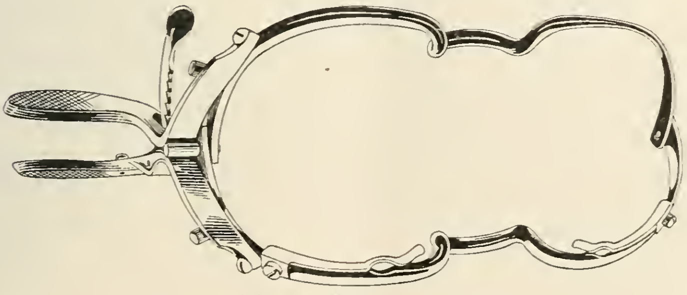

Fig. 2. Mouth Gag.

containing the vascular supply of the tonsil. This advantage alone would warrant the universal adoption of this method were it not for the fact that it requires considerable experience to develop a good technique which, even when mastered, does not prevent the operation from being sometimes a long and tedious one, because of difficulty in dissecting the tonsil out of its bed. The patient is thereby subjected to increased trauma, shock, and a prolonged anesthesia. The adjacent tissues are traumatized by the instruments employed to free the tonsil from its attachments. When sharp dissection is employed, and in a lesser degree with dull dissection, the aponeurotic lining of the tonsillar fossa, which is a part of the intrapharyngeal aponeurosis,[3] is almost always injured or removed, exposing the underlying structures and thereby increasing the danger of hemorrhage and of infection. Prolonged and painful post-operative reaction often ensues and the amount of scar tissue is greatly increased, resulting in palatal deformities and contraction and binding down of the pillars. Not infrequently, obliteration of the tonsillar fossa results. These deformities often give rise to marked changes in the voice.

An instrument has been devised for the purpose of combining the advantages of the guillotine and the snare operations and at the same time avoiding the defects of both. This instrument, which might be called the snaretome, simplifies the technique of the snare operation. It minimizes hemorrhage and shock, diminishes the amount of trauma, shortens the time required for the enucleation, and obviates the complications and sequelae that often ensue.

The instrument consists of two parts: first, the guillotine of Sluder, modified; and, second, a snare to which the guillotine is attachable. The guillotine has been modified by placing on the proximal end of the shaft of the instrument, near the handle, a slide to which a detachable spring has been added. The slide with the spring holds the snare in proper relation to the guillotine until the tonsil is securely engaged. The blade of the guillotine, which is blunt, is shortened around its circumference at the distal end so that it does not quite reach the distal arc of the fenestrum. The blunting and the shortening of the blade obviate the cutting action of the guillotine. At the proximal end of the blade is a ring for the thumb by means of which the operator can readily push forward or draw back the blade, thereby closing or opening the fenestrum. In the arc around the fenestrum is a deepened groove for concealment of the snare loop. The snare is simple in construction, consisting of a slotted canula and a stylet threaded at its lower half. To the middle of the stylet, which travels easily through the canula, two finger rests are attached. On the proximal end of the canula a thumbpiece is placed, which serves also the purpose of closing securely the slotted end. The snare operates quickly on the pull, and gradually by action of the traveling screw. At the distal end of the canula, are projecting teeth which become embedded in the tonsil when it is about to be severed, so that when the enucleation is completed the tonsil remains fixed on the end of the snare. At each side of the canula of the snare is a trunnion or pin which causes the guillotine to engage to it.

The instrument is assembled in the following manner: A strand of No. 7 piano wire, five and three-quarter inches long, is bent three-eighths of an inch at each end. Both ends are inserted in the second or proximal opening of the stylet, thus forming an oval and even loop which does not become dislodged during the operation. The stylet is now drawn into the canula until its tip is just visible. By depressing the snare against the spring of the slide, at the same time pushing the snare forward until the trunnions or pins engage into the groove of the slide of the guillotine, the snare and the guillotine are assembled. The loop is now readily engaged in the groove in the arc around the fenestrum by regulating its size. To enlarge the loop, forward pressure is made on the proximal end of the stylet; to make it smaller, slight traction is made on the finger rests until the loop is of proper size to remain concealed in the groove. This manipulation is done with the instrument assembled.

The gag used in this operation is one devised by Jennings, modified by attaching two springs to the upper bar. These springs are intended to hold the snare out of the operator's field after the first tonsil is secured in the snare loop. The snare is engaged to the gag by the spring, and is so maintained until the second tonsil is also ensnared and the operator ready to complete the enucleation of both tonsils.

Illumination: Good daylight or the ordinary operating room illumination will suffice in every instance.

The technique: The head and shoulders of the patient are slightly elevated. Into the mouth, widely opened by the gag, the snaretome is introduced until the distal arc of the fenestrum is behind the tonsil, which is thereby fixed from behind, and the posterior pillar pushed aside. The instrument, with the thumb engaged in the thumb-ring, is held in the right hand for the right and in the left hand for the left tonsil. As the upper pole of the tonsil is the first to be engaged in the fenestrum, the angle at which the instrument is applied varies with the position of the tonsil in the fossa. The shaft of the instrument is directed upward, backward, and outward when the upper pole of the tonsil is high up between the pillars; backward and outward when it is low, the shaft of the instrument lying across the mouth. Firm pressure is made, and the handle of the instrument is then elevated so that the shaft now points downward, backward, and outward, so that the fenestrum lies behind and to the outer side of the tongue. Without relaxation of pressure, the instrument is drawn forward and upward onto the alveolar eminence of the mandible. Moderate force is required to facilitate the passage of the tonsil through the fenestrum. This accomplished, the blade is pushed forward by the thumb, pressure against the mandible being meanwhile evenly maintained, so that the blunt blade closes on the tissues in the line of cleveage between the tonsil and the anterior pillar. The closing blade is kept as close as possible to the tonsil, so that only that portion of mucous membrane covering the tonsil is removed, conserving the mucous membrane at the margin of and behind the anterior pillar. This precaution saves from one-eighth to one-quarter inch of the mucous membrane of the fossa. Usually the tonsil is properly engaged in the fenestrum with the first application, but if there be any bulging in the anterior pillar it indicates that all of the tonsil is not engaged. Without removing the instrument from its position in the fossa, the tonsil is released by simply drawing back the blade with the thumb, and application is again made until the tonsil is satisfactorily grasped within the fenestrum. The pedicle, which consists of two layers of mucous membrane and the thin areolar tissue by which the tonsil is attached to the intrapharyngeal aponeurosis and through which all the blood vessels supplying the tonsil enter, is now firmly in the grasp of the guillotine. Additional pressure on the closed blade will result in a more effectual strangling of the pedicle and will give almost perfect hemostasis. With the thumb and fingers of the other hand, the snare loop is now drawn tight and held firmly, this action automatically releasing the guillotine from the snare. The guillotine is then laid aside without releasing the hold on the snare. With the free hand, the traveling screw is now quickly turned until the tonsil is safely seized in the snare loop, an extra turn or two assuring firmer grasp of the tonsil and serving to further compress the pedicle with its blood vessels. The snare is then engaged to the gag so that the operative field remains unobstructed and bloodless.

The guillotine is now engaged to a second snare and the procedure is repeated on the other tonsil. Both tonsils are now firmly held in the grasp of the snares, and by slowly turning the traveling screws of the snares the enucleation is completed. During this last procedure, slight traction is made on the snare, so that it is removed from the mouth at the moment the tonsil is severed, the tonsil remaining fixed on the teeth of the snare. If there be an assistant, the enucleation of both tonsils may be completed simultaneously, operator and assistant each turning the screw of one of the snares. Two shaped sponges are gently pressed against the denuded areas and held there for a half to one minute, giving practically dry tonsillar fossae.

If adenoids be present, they are removed in the usual manner and a dry sponge is firmly applied to the retropharynx for a half a minute to one minute.

Examination of the fauces shows the pillars, palate, uvula, and the mucous membrane covering them, to be intact and without evidence of traumatism. There is no injury to the intrapharyngeal fascia which lines the tonsillar fossa. This is evident when it is remembered that the rim of the arc of the fenestrum when pressed against the pillars renders the intrapharyngeal fascia and pillars taut and allows only the thin, loose, areolar tissue which is adherent to the tonsil to engage in the fenestrum when the blade is closed. Thus, what Makuen calls an intra-capsular enucleation[4] is performed.

The removed tonsils are mushroomed. Restoring the normal relationship of the tonsil and its capsule, it is seen that the tonsil is complete, that the mucous membrane is cut very close to the tonsil, leaving no shreds—the cut edge appearing like a distinct line around the tonsil. The external cut surface shows a pale, thin layer of connective tissue through which glandular structure is readily seen, and no muscular tissue is adherent. The thin layer of connective tissue can be lifted from the tonsil and is seen to be translucent. A few small blood vessels are noted in this connective tissue capsule, which is not a part of the true intraphayrngeal aponeurosis. It is in this areolar layer that the blood vessels are most easily and effectively compressed, and hemostasis is frequently complete.

In other words, the capsule of the tonsil is split[5] so that the thin areolar portion remains adherent to the enucleated tonsil, and the thicker layer which is part of the intrapharyngeal aponeurosis descending from the base of the skull is left, uninjured, lining the denuded tonsillar fossa.

The post-operative reactions are very slight, if present at all. The decreased trauma, absence of injury to pillars, uvula, palate, and intrapharyngeal aponeurosis, the conservation of mucous membrane, and the greatly diminished shock and hemorrhage combine to minimize the discomfort and dangers. Pulmonary complications and cellulitis have not been met with. Prostration is absent. Pain, difficulty in swallowing, are mild when encountered, and subside in one to three days. Complete healing of the wound takes place in one week or less, without deformity.

Conclusions: Experience with the method in over 1,600 cases in the Children's Clinic of the New York Department of Health and in private practice, and in more than 400 cases with the present improved instruments, shows the technique to have the following advantages:

(1) The decreased hemorrhage, both primary and secondary, and consequent avoidance of secondary anemia.

(2) The markedly decreased traumatism to the fauces—there being no injury to pillars, uvula, palate, pharyngeal muscles—and the diminished amount of mucosa injured and removed. This result is also contributed to by the absence of sponging.

(3) The preservation of the normal anatomical relations of the pillars, palate, uvula. The absence of contracting scar tissue avoids shallowing of the tonsillar fossa.

(4) The enucleation with equal ease of every type of tonsil, small, large, mushy, fibrous, flat, submerged. Thus but one technique is required for all cases.

(5) The diminished number of instruments and their simplicity.

(6) The ease with which the technique is performed, and the automatic action of the instruments, requiring little attention from the operator.

(7) The impossibility of engaging in the snare any tissues other than those engaged in the guillotine.

(8) The diminished narcosis which, with the lessened hemorrhage, tends to avert pulmonary complications.

(9) The greatly reduced danger of septic infection, because of the very markedly diminished trauma and the absence of injury to the intrapharyngeal fascia.

(10) The dry field after ensnaring the first tonsil, rendering unnecessary the use of suction apparatus or sponging to keep the operative field unobscured for the engagement of the second tonsil.

(11) The use of daylight or the ordinary operating room illumination, avoiding the necessity for complicated, cumbersome and costly electric apparatus.

(12) The ease with which the operator can determine by sight whether the tonsil is completely engaged and, if not, the facility with which further application can be made until the complete tonsil is included in the fenestrum.

(13) The saving of time gained by dispensing with the use of tonsil-seizing forceps, knives, separators, scissors, their function being more effectively performed and, with far less trauma, by the guillotine of the snaretome.

(14) The lack of need for assistants for the proper and safe performance of the operation.

(15) The absence or mildness of reactions, and the prompt recovery from them when present, complete healing taking place within a week.

All these advantages make for the safety and comfort of the patient and lighten the burdens of the surgeon. They remove the element of doubt as to the immediate and remote results of the operation.

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HEADACHE: ITS OTO-RHINOLOGICAL ASPECTS.*

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This subject is a very broad one. It would be impossible to cover the entire field in several symposiums. I will only attempt to mention and discuss some of the most common causes of the symptom "headache." I say symptom, because headache is no more a disease than rheumatism, and we should be severely criticised if we treat this condition without finding the cause. The causes of "headache" may be divided into the following heads: Toxic (intestinal, appendiceal, gall-bladder, prostatic, tonsillar, nasal cavities, dental, renal, aural); reflex from eyes, pressure in nose, from uterus, from irritated tooth.

I shall limit myself to the causes found in ear, nose and throat.

The most common and most often overlooked cause, from personal observation, is pressure in the nose, without any marked pathological condition being apparent.

Case 1. Mrs. H., referred to me from Baton Rouge, suffering with very severe pain over entire right side of head, more severe in supraorbital region. Patient had been under physician's care for past two weeks and only relief was obtained from morphin.

Examination of nose. Membranes look healthy, no abnormal secretion. Middle turbinate on right tightly wedged between septum, which is slightly deviated in upper part to right and outer wall of nose. It was impossible, even after tissues had been shrunk, to pass the smallest cotton-wound applicator between the septum and turbinate; or turbinate and outer wall. Color of turbinate pale from pressure. Middle turbinectomy performed; patient relieved at once. She explained that she had the sensation of a spring being removed and pressure relieved. Patient has had no trouble since, now eight months.

I could cite any number of such cases where either the middle turbinate or septum have been removed and the patient cured.

Case 2. Mr. G. D., age 44. Past history negative. About 12 years before I first saw the patient, he began having a pain and a throbbing over the left side of the head, at first periodical, increasing in frequency. He has been treated by a number of physicians without much result. Eyes, negative. Pains are now constant and very severe; has had to give up work.

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*Read before Tour Infirmary Clinical Society of New Orleans, Wednesday, February 7, 1917.

Examination. Septum deviated to left, middle turbinate scarcely visible and seems tightly wedged, slight amount of mucus but no pus. Submucous resection performed. Patient's condition improved rapidly; it is now two years since operation and he has had no headaches. This is another case of pressure pain and possibly a secondary occlusion of the sinuses. Just a few words in regard to the sinuses. It is often hard to say just what sinuses are at fault. Often all are involved.

Case 3. Patient has suffered with headaches for 16 years and has been to various clinics; was sent to the nose and throat clinic about two weeks ago. Slight amount of pus found under the middle turbinate and posteriorly. Antrum washed out and great amount of pus was found. Patient relieved for 24 hours. Three days later the antrum was again washed. This washing was repeated every other day for ten days, but the pus and the pain continued. January 30, the inner wall of the antrum was removed. Patient is now free from headache and the amount of pus is very slight. In this patient the symptoms were due to pus absorption and possibly to some reflex irritation of the branches of the fifth nerve.

Suppuration of the frontal sinus will often give no pain, as long as drainage is good. However, the most violent pain is caused when we have a closed suppurating frontal sinusitis. Often simply removing the obstruction and washing out or aerating the sinus will relieve the condition. Ethmoid sinusitis causes a number of obscure headaches; the pain is very variable, from a sense of fullness over the bridge of the nose, to severe pain over the entire head. Another reason why headaches from the ethmoid sinuses is hard to diagnose is that there often is no visible trouble. We may, by probing, find a polypoid condition and after excluding other sinuses, place the blame on the ethmoids. In polypoid sinusitis, ther is often no pus and very little abnormal secretion.

Last but not least is the sphenöid sinus. No doubt this sinus is the cause of a great many obscure pains in the head. Let us just a moment consider the anatomy of this sinus. The sphenoids are two irregular shaped cavities in the back part of the nose, just posterior to the ethmoids; their openings are at the top and very seldom visible. Posteriorly they are separated by very thin bone from the pituitary body, cavernous sinus and the third, fourth, fifth, sixth and Vidian nerves. These nerves are often found running under the mucous membrane of the sinus, or only separated from it by a thin wall of bone. By injecting cocain into this sinus, we can often get anesthesia of one or more of these nerves. Now, if absorption of cocain can take place into the nerves, does it not stand to reason that a sinus full of pus or degeneration, would affect these same nerves?

Dr. Greenfield Sluder stated in a paper read before the American Medical Association, May 5, 1915, as follows: "I believe many (but not all) of the recurrent headaches that bear the name migrain are sphenoidal empyemata, that have lost most if not all local signs; or were started as such empyemata; and that the nerve trunks have become involved either by extension of the inflammation (or its toxin) through the thin wall separating the sphenoid sinus from the adjacent nerve trunks."

The treatment of these cases is removal of the anterior wall of the sphenoid, and if badly diseased, curetting gently and washing out with aqueous solution of sodium salicylate (2 to 5 per cent) or 1 per cent carbolic acid in oil.

Often the headaches spoken of as occipital are sphenoidal in origin.

Case 4. Mrs. H., age 45, has suffered nearly continually with pain in the occipital region, often very severe; duration two years; has been treated by gynecologist, oculist, general practitioners, osteopaths and even Christian Scientists, with very little relief.

Examination of nose. Nothing abnormal noticed. Post nasally one could see a small amount of thick pus over the posterior end of the middle turbinate; removed middle turbinate and curetted the posterior ethmoids. Patient slightly relieved. -Two weeks later opening of sphenoid found and the sinus washed; much improved. Anterior wall removed later. Patient is now entirely relieved; only occasionally comes to have sinus irrigated.

We should always be on the lookout for trouble with the teeth, causing reflex pains in head. In touching on this part of the subject very lightly, I would caution all about relying too much upon the appearances of a tooth. The x-ray is the only reliable way to rule out the teeth as causative factors. In the throat the most common cause of headache is absorption from diseased tonsils. Often we get reflex pains from the ears in chronic catarrhal otitis. The pains from acute otitis, mastoiditis, sinus thrombosis, brain abscess and a number of other conditions about the head and neck can only be mentioned.

Case 5. Mrs. C. F., age 44, has had discharge from the left ear as long as she can remember. For the past ten years she has suffered a great deal of pain over the left side of the head, often very severe. Two months ago she was suddenly attacked with violent vertigo and could not stand up. Nausea and severe vomiting. Was sent to the Charity Hospital and admitted to the medical service. I was called to examine the ears. At this time patient had free discharge of pus from the left ear; drum membrane bulging. Mastoid only slightly tender; strong nystagmus to the right; could not sit up in bed as she would always have tendency to fall to the left. No labyrinthine tests were made; advised patient's transfer to otological service. I did not see the patient for a week, then was called by one of the otologists in consultation. The patient was now very ill, temperature 103°. Mastoidectomy was performed the next day; found very sclerotic bone, small antrum, middle ear full of cholesteatomatous material. Fistula in horizontal semi-circular canals. The patient has made an uneventful recovery; all dizziness and nystagmus have disappeared. The patient now has no headaches and feels in every way much improved. This case is not reported in detail as to the interesting labyrinth condition, but to illustrate headaches from chronic otitis.

Case 6. Miss S. M., age 29. April à3, à914. Headache all the time over eyes and back of head. Tightly wedged middle turbinate removed from the right side of the nose. Septum deviated considerably in upper part to the right; no visible pus.

May 11. Has had very little pain in the head for the past two weeks and feels much better.

May 14. Pain over right side of the head, pus coming from right frontal and ethmoid regions. Wassermann, negative.

May 20. Pain still severe, impossible to enter frontal on account of deviated septum.

May 24. Suffering a great deal. Sent to Presbyterian Hospital. X-ray shows ethmoids on right very cloudy.

May 27. Submucous resection of septum and ethmoids scraped, sphenoid opened. Patient, as would be expected had considerable pain.

June 29. Patient is now free from pain and feels fine; discharged.

September 1. Patient returned complaining of severe pain in the supraorbital region. Nerve injected with alcohol; relieved two days.

September 17. Supraorbital nerve injected again.

October 26. Patient has remained free from pain until last few days; now severe pain over first and second divisions of the fifth nerve.

November 2. Supraorbital and second division of fifth injected; only temporary relief.

October 16. Supraorbital nerve removed under local anesthesia and forament plugged with wax.

December 8. Patient returned suffering with pain in second and third divisions of the fifth nerve. Injection attempted a number of times by myself and later by Dr. Allen with only slight result.

January 16. Gasserian ganglion removed by Dr. Allen and myself.

January 23. Discharge from right ear, slight facial paralysis.

January 23. Discharge from right ear; drum incised. Facial paralysis marked. Pain over mastoid.

March 2, 1915. Patient has very little pain, still some tenderness over mastoid.

July 9. Mastoid very tender. Leucocyte count, 20,000; temperature, 102°. Mastoidectomy performed under local anesthesia; small amount pus, considerable necrosis of mastoid.

Since this operation the patient has had periodical attacks of pain and tenderness over the mastoid, sometimes over the course of the facial nerve. Her eye has caused a great deal of pain and she has had to use dionin and olive oil freely. Just how to account for this pain over the fifth nerve I am at a loss and hope to have some one explain it. Is it a hysterical condition? Certainly after complete removal of the ganglion there could not be regeneration of the nerve.

In closing, I should like to apologize for presenting a subject in such an haphazard way, my only excuse being that the subject is too large and time too short to do otherwise. My intention was simply to call attention to some of the most common causes of headache and to point out that it is not always an easy matter to say whether the nose and throat are or are not the cause of the trouble.

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LATERAL SINUS THROMBOSIS WITH SPONTANEOUS RUPTURE OF THE SINUS.

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Sinus thrombosis presents such a variety of symptoms and runs such an irregular course that it is one of the most interesting studies in the field of otology. This multiplicity and irregularity may obscure the condition to such an extent as to make a definite diagnosis impossible before operation, or even before autopsy. While the infective thrombosis is usually found in the sigmoid portion of the lateral sinus, it may involve the whole lateral sinus from end to end, including the jugular bulb and vein; also the superior and inferior petrosal, the cavernous and the longitudinal sinuses. While the invading organism is usually the streptococcus, other pyogenic bacteria may cause the infection. Horn[1] has recently reported a case of pure streptothrix infection which terminated in cavernous sinus thrombosis and death.

Other complications that tend to change the clinical picture and obscure the diagnosis are extra-dural abscess, meningitis, cerebellar abscess and septicemia. In the absence of all these the diagnosis is not necessarily simple, for in uncomplicated sinus thrombosis we often have no definite symptoms and the disease may progress to a dangerous stage before the physician suspects its presence. These cases are unrecognized because the septic thrombus has been walled off by aseptic blood-clot in nature's effort to bring about spontaneous recovery. Friedenwald[2] reports several cases of this character and numerous other writers have reported cases in which complete obliteration of the sinus by collapse or blood-clot had been observed during operation or at autopsy. A number of cases are reported of sinus thrombosis running a non-febrile course in which obliteration of the sinus took place. The non-febrile course is variously explained,—by the aseptic character of the thrombus, by the mild nature of the infection, or by the discharge of pus formed through an opening in the outer wall.

The lateral sinus is most apt to be involved during an acute exacerbation of a chronic purulent otitis media. If during the course of an O. M. P. C., acute mastoiditis, or following the mastoid operation, the patient develops a rigor, we immediately think of sinus thrombosis and the importance of early operation. However, we are not justified in opening up the sinus until we have at least excluded malaria. The similarity of its temperature curve has caused this mistake a number of times. Far more serious is the mistake so often made by the genral practitioner in diagnosing thrombosis as malaria and treating it as such until the patient is in a desperate or hopeless condition. Such were the circumstances attending the case I shall report a little later.

Thorough examination of the blood is of great value in all cases of suspected sinus thrombosis. Not only can we thus exclude malaria, but leucocytosis and high percentage of polyneuclears would indicate thrombosis. If the diagnosis is not clear and time permits, a blood culture should always be made to ascertain if a bacteremia exists. Oppenheimer[3] and others have found bacteremia to be a reliable sign of infective thrombosis provided other foci of infection are excluded. If a positive culture is obtained they open the sinus at once. So long as suspicious symptoms continue they advise daily cultures until a positive result is obtained or the patient's condition improves. If following the sinus operation, streptococci are found in the blood after the first day, it indicates that the internal jugular vein is also involved in the thrombosis and measures for its operative relief should be at once carried out. The x-ray, which is such a valuable aid to diagnosis in mastoiditis, may be of use in clearing up doubtful cases of sinus thrombosis. It is not to be relied on, however, for the whole lateral sinus may be quite normal and the clot limited entirely to the jugular bulb. In such cases we would expect to find granulations or carious bone on the floor of the tympanic cavity.

The most characteristic and at the same time the most obvious symptom of septic thrombosis is the rigor produced by the entrance into the blood stream of toxins or bacteria. Graham[4] speaks of the remarkable complacency with which these startling symptoms occurring in ear cases are looked on by many practitioners. We agree with him that one chill is not enough to confirm the diagnosis; one should always wait for a second chill before operating. It may be possible for the patient to have both malaria and sinus thrombosis at the same time and thereby cause diagnostic confusion and dangerous delay. In like manner syphilis or erysipelas may cloud the issue. According to Jansen,[5] Hessler, and others, thrombosis affects males three and one-half times more often than females. The right side is more frequently affected than the left which is probably due to the greater width of the right sinus.

The internal jugular vein may be thrombosed also; then in addition to the ordinary signs of lateral sinus thrombosis there may also be infiltration of the tissues of the neck or tenderness along the anterior border of the sterno-mastoid muscle. Burghard[6] says the prevalent idea that a thrombosed jugular vein can be felt on palpation as a hard cord extending down the neck is erroneous. If anything is felt it is the enlarged cervical glands which lie along the vein. We fully agree with him that it is bad practice to palpate the internal jugular as by doing so there is considerable danger of dislodging particles of the septic clot.

The prognosis is more favorable in sinus affections arising during an acute attack of otitis than in the chronic forms. The prognosis is decidedly unfavorable when meningitis, brain abscess, metastases in the lungs, or thrombosis of the cavernous sinus occurs.

To dwell upon the treatment of lateral sinus thrombosis now would be an unnecessary waste of time, but I will repeat for the sake of emphasis that early diagnosis is of paramount importance. Neither time nor trouble must be spared in this and having made a positive, or reasonably positive, diagnosis, we must proceed without delay to open and clean out the infective thrombus as thoroughly as possible.

The following case clearly illustrates the importance of early diagnosis and operation in these cases:

Miss D., age 16, was brought to the hospital June 5, 1916, by her family physician, and I was called in to see her. She gave a history of measles eight years ago followed by running ears ever since. Two weeks ago the right ear stopped discharging and she soon began having an aching pain in the right side of her head. Since then she has had five rigors and a temperature varying from 99° to 103°. During that time she has been treated for malaria. Her appearance was good; she was well nourished and developed, had very good color, mind clear, and resting comfortably. Temperature 100.6°; pulse 130; respirations 26. No inflammation or swelling over the mastoid regions; slight tenderness on pressure over the right mastoid. Right membrana tympani appeared black and necrotic and dark-colored granulations were visible in the middle ear through its opening.

We decided to do a radical mastoid at once and open the sinus if necessary. After making the primary post-auricular incision and elevating the periosteum forward to the bony meatus, we were surprised by a very profuse hemorrhage from the middle ear which was controlled after a few minutes' pressure applied by packing the middle ear. This unusual condition, we later found, was due to rupture of the walls of the lateral sinus above the thrombus. Removal of the outer plate of bone revealed one large, pulsating, pus cavity comprising the middle ear, antrum and all the mastoid cells. This was filled with a thick, cream-colored pus and rested directly on the dura and lateral sinus, as all the bony covering had disappeared. The dura covering the temporal lobe was of a dark purplish hue, while the outer wall of the lateral sinus was black and necrotic, covered with granulations in part and perforated at the upper margin of the thrombus where the hemorrhage mentioned above had come from. The patient was doing so badly we feared she would die on the table, so after cleaning out the whole cavity as quickly as possible we packed it lightly with iodoform gauze and put her to bed, hoping she would revive sufficiently for us to finish the operation later.

June 6: Patient much improved; temperature 98°; pulse 84; respiration 24; polyneuclears 90 per cent. Had rigor at 3 p. m., temperature rising to 102.2°, and another rigor at midnight.

June 7: Temperature 103.2°; pulse 140; respiration 28. Patient very weak and although we feared she would pass away on the table I obtained her father's reluctant consent to finish the operation. After ligating and dividing the internal jugular vein, we proceeded to expose the lateral sinus down to the jugular bulb and back well beyond the thrombus toward the longitudinal sinus. After packing it off above, the sinus was opened from end to end, the clot removed, the bulb curetted out thoroughly and irrigated by forcing normal saline through it and the jugular vein. All softened bone and necrotic soft tissue were then carefully removed from the mastoid and tympanic cavities, iodoform gauze and drainage tubes introduced and external dressing applied. The patient stood the operation well and was in fair condition next morning. Temperature 98.6°; pulse 100; respiration 20. She had no more rigors for three days but continued to run an irregular temperature.

June 10 and 11: Severe rigors. Patient developing a septic color and temperature, which continued to get worse.

June 13: Severe epistaxis controlled by ice packs. Spleen palpably enlarged. Patient restless and murmuring.

June 14: Patient profoundly septic and in state of semi-coma. Pulse too weak to count.

June 15: Death occurred in early morning.

I failed to state that we gave her several injections of Mulford's staphylo-streptococcic bacterin.

This case presents some points of interest and a lesson in the importance of early recognition of these conditions:

1. Spontaneous rupture of the lateral sinus is very rare; the clot usually walls off the blood stream well back of the necrotic sinus wall.

2. The mild nature of both the objective and subjective symptoms attending so much mastoid necrosis, together with this immense epidural abscess and extensive sinus thrombosis.

3. The absence of metastatic foci of infection during the whole three and one-half weeks of its course.

4. Had a correct diagnosis been made two weeks earlier when the patient had her first rigor she would no doubt be alive to-day.

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Exchange Building.

Surgical Correction of Deformities of the Nose Without External Scarring. J. Bourguet, *Lancet,* May 12, 1917.

Under local anesthesia Bourguet separates the skin from the underlying supporting tissues. The bone and cartilage in the superfluous segment of the nose is then removed either with a saw or with an electrically driven burr and the skin restored to contact with the improved superstructure. In completely deviated noses portions of the frontal bones are luxated, the perpendicular plate of the ethmoid fractured and the bony frame of the nose held in position by means of an intranasal splint or external apparatus. In saddle nose the author transplants a piece of tibia covered with periosteum. Ed.

ADHESIONS OF THE SOFT PALATE TO THE POSTERIOR PHARYNGEAL WALL; A SUCCESSFUL SILVER PLATE METHOD OF TREATMENT.

DR. FRANKLIN HAZLEHURST, Baltimore, Md.

The most common cause of adhesion of the soft palate to the posterior wall of the pharynx is syphilis in the tertiary stage. Adhesion is relatively frequent in the hereditary form of lues. Rhinoscleroma, of rare occurrence in this country, is mentioned as the next most important etiological factor inducing palatal adhesions. As less frequent causes may be regarded diphtheria, lupus,[1] and pemphigus. Avellis[2] reported a very rare lesion due to the last mentioned disease, a palatal adhesion so near complete that only a fine canal persisted just back of the uvula. Three similar cases had been reported previously by Schroetter,[3] Landgraf,[4] and Steffan,[5] respectively. Traumatic adhesion reported by Konig,[6] occurred in a little girl of eight years following operation for adenoids. Monod[21] described a case of cleft palate in a man 63 years old, in whom the two lateral parts of the palate were adherent to the posterior pharyngeal wall, and the posterior pillars of the fauces no longer visible as distinct structures. This condition he regarded as congenital.

Complete adhesion is really rare. In practically every case, there is a small residual opening connecting the naso-pharynx with the pharynx. A number of complete adhesions are, however, mentioned in the literature. Hajek[7] reported operation upon five such cases. Foster,[8] McDougall,[9] Hartman,[10] Roy,[11] Lichtwitz,[12] and a few others, reported cases of total adhesion. Cartaz,[13] reporting on one case of his own, collected 39 from the literature. Lichtwitz, while reporting his case as one of total adhesion, admitted the presence of a small fistula. In Schroetter's statistics, quoted by Lieven,[14] complete adhesion occurred in 0.3 per cent of the cases of luetic scarring.

Lieven classifies the cases according to extent of adhesion, into first grade, adhesion between the salpingo-pharyngeal fold and the posterior wall of the palato-pharyngeal arch; second grade, adhesion complete except for a perforation in place of or near the uvula; third grade, total adhesion. The soft palate may be greatly malformed. The nasopharynx may be more or less filled with fibrous bands, which at operation are broken down or cut through with difficulty.

The symptoms are largely those of nasal obstruction, and accordingly vary in severity in proportion to the extent of the lesion. Consequently, greater or less difficulty in blowing the nose, dryness of the throat due to constant mouth-breathing, anosmia, accumulation of the secretions in the nasal passages, muffled voice, deafness, headsounds, dyspnea, night terrors, aprosexia nasalis, laryngitis, tracheitis, bronchitis may be expected as prominent features of the sympomatology.

Treatment is mainly directed, after loosening or cutting through the adhesions, toward preventing readhesion and by a few operators toward preventing in as great measure as possible further contracture of the scar tissue of the soft palates and pillars of the fauces.

Hajek advised operation under cocain anesthesia, with the line of cleavage made as close to the posterior pharyngeal wall as possible, thereby saving the greatest amount of palatal tissue. The cut was made upon a sound introduced through the nose. The operation was completed to the point of separating the fibrous strands in the nasopharynx, in several sittings, the wound being packed with gauze during the three to four day intervals between sittings. Hajek then introduced a rubber plate (first used by v. Beregszaszy), which was left in one or two days according to the sensitiveness of the patient, then removed and replaced at intervals of a day until healing occurred. Hajek states that after healing occurs, the palate should be frequently stretched by pulling upon it with a uvula hook.

Lieven proposed an ingenious method of combating, at the same time, the tendency to readhesion and contracture of the scarred tissue of the palate. This consisted in passing daily into the nasopharynx a tiny rubber bag which could be inflated through a small rubber tube lying in the nose, to any desired pressure, and left in for a varying length of time, according to the indications. This method the writer tried on a patient, a young woman with only a tiny fistula persistent between the pharynx and nasopharynx. The tip of a rubber finger was tied securely to a metal connection, a rubber catheter, passed through the nose into the pharynx, was drawn out through the mouth and slipped on the other end of the metal connection. The improvised rubber bag was pulled up into the nasopharynx by gentle traction on the catheter, inflation accomplished, using an atomizer bulb, and a pinch-cock applied to the catheter. This treatment was used daily until the patient refused further attendance, the inflated bag being left in for several hours at a time. While feasible and attended, as far as we were able to go, with some degree of success, the method was certainly quite uncomfortable to the patient.

Several authors mention the use of hollow obturators fastened to dental plates to maintain the patency of the nasopharyngeal passage. Cardoux,[15] Kuhn,[16] McDougall,[9] and Schadle[17] made use of this principle. Hamilton,[18], Foster,[8] and Spencer[19] employed some form of bougie.

The writer's second case had almost a total adhesion, practically preventing breathing through the normal passage, but anteriorly in the soft palate there was a perforation through which the patient got an insufficient amount of air. When this palatal perforation was occluded by a cotton plug, the patient had a disagreeable sense of suffocation. As the method of treatment described above, namely, dilatation by means of an inflatable rubber bag in the nasopharynx, had been unpleasant to the patient, the writer desired to try in the second case to prevent readhesion, the introduction into the nasopharynx of a thin silver plate, having in mind the known bactericidal effect of silver. This should be less irritating than any other means and consequently longer borne.

At the operation done under ether anesthesia given through the Kuhn peroration intubation tube,[20] the palatal adhesions were cut through keeping as close to the posterior pharyngeal wall as possible, and adhesions in the nasopharynx partly cut through and partly loosened by the finger. The palatal perforation mentioned above was freshened on the edges and closed by suture. The thin silver plate was trimmed with scissors to the required size, approximately 3 cm. square, the sharp corners rounded slightly. Into one of several small holes in the plate, a silver wire was attached and the loose end of the wire then fastened to a rubber catheter passed through the nose into the mouth. Traction was then made on the catheter and with the aid of a little manipulation from the pharyngeal side, the plate drawn snugly into the nasopharynx. The wire, holding the plate in position, was fastened to the cheek by adhesive plaster.

The plate was borne by the patient without removal for eighteen days with practically no discomfort. When removed, the patient could breathe freely through the nasal passages. This patency still persisted three years later. The patient has a nasal twang to the voice owing to the imperfect action of the scarred palate, exact approximation of the palate to the posterior pharyngeal wall not being possible.

This method is presented not as one which will restore to normal action more or less scarred palatal structures, but one which, from the standpoint of the operator, is easier of application and, from that of the patient, freer of attendant discomforts than other methods that have been used. It would seem that very little can be accomplished toward preventing further contraction of the loosened palate tissue, but the prevention of readhesion is readily assured by this method.

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108 W. Saratoga Street.

AN INTERESTING CUT-THROAT CASE.*

Dr. William Wesley Carter, New York.

The patient, a man, 28 years of age, suddenly seized with suicidal mania, slashed both his wrists with a razor and then drew the blade squarely across his neck just above the upper edge of the thyroid cartilage. The hemorrhage from the wristc uts was severe, but was easily checked. There was only moderate bleeding from the wound in the neck, though the incision reached almost to the posterior pharyngeal wall.

The skin wounds were stitched up by a general surgeon and the man was brought to my service in Gouverneur Hospital. The case was not seen by me until forty-eight hours after the injury; at this time the following conditions were noted: The patient was breathing through a hole in the neck just above the thyroid cartilage and could not speak. A stitch had been taken in either end of the cut; this included only the skin and the important structures had not been approximated.

The cut had been made between the thyroid cartilage and the hyoid bone, severing the epiglottis at its base. On looking into the mouth the epiglottis could be seen protruding above the level of the tongue. Through the gaping wound in the neck the larynx could be unusually well demonstrated, and beyond the larynx could be seen the posterior pharyngeal wall.

Operation: Under local anesthesia the upper portion of the larynx, which had been drawn upwards about two inches, was pulled down by means of sharp hooks and held while it was being sutured into its proper position; all of the parts being carefully and accurately approximated. The wound was then packed with iodoform gauze. Healing by granulation was encouraged for about two weeks. The margins of the skin were then pulled together and sutured with horse-hair.

Both the cosmetic and functional results were perfect.

The interesting features connected with the case were:

(1) The would-be suicide selected the exact spot where a cut can be made across the neck to a great depth without wounding any vital structures.

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*Read before the New York Academy of Medicine, Section on Rhinology and Laryngology, November 16, 1916.

(2) The extraordinary manner in which the muscles attached to the hyoid bone pulled this bone and the upper portion of the larynx, including the epiglottis, up into the throat, when it was liberated by the cut from its attachments to the larynx.

(3) The remarkable picture of the larynx presented through the wound in the neck.

(4) The inability of the patient to utter a syllable until the hyoid bone and the upper portion of the larynx had been pulled down and sutured in their proper position, when articulation at once became perfect.

Later note on the case: The day before this patient was to be discharged from the hospital, he jumped out of the window and was instantly killed.

It would seem to the writer that all would-be suicides should immediately be placed in a prison ward or in an insane pavilion and kept under close observation.

69 West Fiftieth Street.

A CASE OF STAPHYLOCOCCEMIA.*

Dr. William Wesley Carter, New York.

This case was seen by me in consultation with Dr. C. N. B. Camac in connection with my service in Gouverneur Hospital.

Mary S., married, age 28, a native of Austria, was admitted to the hospital on October 19, 1916.

Her family history is unimportant. Her health, previous to her present illness, has been very good. She has never had any serious illness or any ailment which might throw light on her present condition. The patient has had nô miscarriages. She has had two normal labors; one child is living and well; the other died at the age of one year from heart disease.

The onset of her present illness was gradual. Eighteen days before her admission to the hospital her appetite became poor, she had a cold in the head, a slight cough, severe headaches and some fever. One week before entering the hospital she had pain in the right shoulder, and five days later pain in the left hand and wrist. She was treated by a private physician, but, becoming much worse, was brought to the hospital.

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*Read before the Section on Rhinology and Laryngology, New York Academy of Medicine.

Examination of the patient on admission showed the following conditions: Patient well nourished, suffering pain in shoulder and left wrist. Slight cough; no expectoration; face flushed; temperature 104.5°; respiration 38; pulse 130.

Pupils equal and react to light and accommodation. Tongue coated brownish, dry and cracked. Teeth decayed and gums red and swollen. Muco-purulent secretion in naso-pharynx. Tonsils negative. Nose filled with muco-purulent secretion.

Heart: Apex above normal position. Soft systolic murmur at apex, not transmitted. Pulmonic second sound accentuated.

Lungs: Diminished breath sounds over left apex. Crepitant rales in infra-scapular region on left side. Occasional sibilant rales over both lungs.

Spleen distinctly palpable. Liver and kidneys not palpable.

Fine vesicular rash over entire abdomen.

Right shoulder very tender. Left wrist swollen and painful.

Inguinal glands enlarged.

Reflexes diminished.

Laboratory reports: Urine normal. Vaginal secretion contains no gonococci. Sputum negative for tubercle bacilli. Blood: *Red cells,* 3,200,000. *Hemoglobin,* 48 per cent. *Leucocytes,* 10,200. *Polynuclears,* 83 per cent. *Large lymphocytes,* 6 per cent.; *small lymphocytes,* 6 per cent; *large mononuclears,* 2 per cent; *small mononuclears,* 3 per cent.

At end of 24 hours, blood culture shows 100 colonies per cc. of staphylococcus pyogenes aureus.

Fluid from the knee, which became involved on the second day after admission, showed on culture staphylococcus pyogenes aureus. Pus from the nose showed the same organism.

Several cultures of blood were made at intervals and in each instance there was an abundant growth of staphylococcus pyogenes aureus.

Condensed report of clinical course of disease during the eighteen days patient was in hospital under observation: Temperature fluctuated daily between 102° and 105°. The respirations and pulse were rapid, but at no time was there any marked disturbance in the normal ratio until just before the lethal event. Lowest respiration 24 and pulse count 108; highest 60 and 132 respectively. Pulsation in the veins of the neck was marked. The skin of the face became bronzed. A petechial hemorrhage occurred in the conjunctiva and subcutaneous hemorrhages over the left malleus and right heel. The mouth and tongue were very dry and covered with sordes. The gums around the incisors were red and swollen. The tonsils were apparently normal. There was a considerable amount of pus dropping down from the naso-pharynx. Both nasal cavities were filled with muco-pus. This was removed as complete casts. The septum and turbinates were ulcerated and bled freely. On the left side especially there was a considerable amount of liquid yellow pus which was coming apparently from the ethmoid cells. Cultures made from this pus showed the staphylococcus.

The treatment was supporting, augmented by the administration of autogenous vaccines. Of the latter, three doses were given; two of 100,000,000 each on the eleventh and thirteenth day after admission; one of 200,000,000 on the seventeenth day. These were without perceptible effect.

The patient succumbed to the disease on the eighteenth day after admission and on approximately the thirty-fifth day of the disease.

The salient points in the autopsy reports are: Nose and throat filled with muco-pus. Ulceration on septum and turbinates; ethmoiditis. Pulmonary and bicuspid valves ulcerated and covered with recent vegetations. Lungs filled with small metastatic abscesses. No abscesses in any other part of the body, and no lesion in any part of the body which might have been considered a more likely portal of infection than the nose and mouth. The spleen was enlarged to five times its normal size.

Staphylococcemia is either a rare condition or it is a condition infrequently recognized. For this reason and for the reason that most likely the infection gained its entrance to the circulation through the nose or mouth, I have considered this case worthy of your attention.

In review of the comparatively few cases of staphylococcemia reported in the literature, in almost every case there is uncertainty as to the portal of infection, and it would seem to me that this would be a question practically impossible to decide unless the condition is recognized very early in its course.

A very interesting feature of this case is the involvement of the right heart (due no doubt to the infected lympho-venous return stream), and the miliary abscesses in the lung, the infection having been distributed through the pulmonary artery.

The futility of vaccine therapy in this case is in keeping with the experience of all other observers; for no laboratory has yet produced an effective antistaphylococcus vaccine. In this instance, however, the vaccines were not given a fair trial, for the patient was not seen by us until the eighteenth day of the disease, and the culture could not be made and the vaccine prepared before the twenty-seventh day.

My experience in this case prompts me to urge that blood cultures be made as early as possible in every case where there is the slightest suspicion that the blood stream is infected. By so doing a fair verdict could be reached as to the real value of autogenous vaccines.

69 West Fiftieth Street.

Foreign Body in the Right Maxillary Antrum for Twenty-five Years Causing Nasal Neuralgia. Irwin Moore, Proc. Royal Med., Laryngol. Sec., Jan., 1917.

Patient, a woman, 67 years old, complaining of facial neuralgia of twenty-five years' duration. Upper molars had been removed and patient had been repeatedly treated without benefit. X-ray showed a rod-shaped body in the right maxillary antrum. Removed by operation and it was found to be a piece of pure aluminum 1.34 cm. long and weighing 3.69 grains. The case is of interest as showing that: (1) the maxillary antrum will tolerate a foreign body for 25 years without causing catarrh or suppuration; (2) the shadow of the piece of metal could be distinctly seen on transillumination of the antrum; (3) the appearance of the aluminum was not compatible with its being metal; (4) cases of facial neuralgia may be treated for years without any suspicion of being caused by antrum trouble. Ed.

EDITORIAL DEPARTMENT

PERORAL ENDOSCOPY AND LARYNGEAL SURGERY.

EDITED BY
DR. CHEVALIER JACKSON, Philadelphia, Pa.

ANCIENT FOREIGN BODY CASES.

It is well-known that the lower animals get foreign bodies lodged in the food passages and, though less frequently, in the air passages. Hence we deduce that foreign body cases long antedated man on the earth. The earliest literary reference that the author has been able to find is the following fable attributed to Aesop:

The Foreign Body Case According to Aesop.—A wolf devoured his prey so ravenously that a bone stuck in his throat, giving him great pain. He ran howling up and down, and offered to reward handsomely anyone who would pull it out. A crane, moved by pity as well as by the prospect of the money, undertook the dangerous task. Having removed the bone, he asked for the promised reward. "Reward!" cried the wolf; "pray, you greedy fellow, what reward can you possibly require? You have had your head in my mouth, and instead of biting it off I have let you pull it out unharmed. Get away with you, and don't come again within reach of my paw." (The Wolf and the Crane. The Fables of Aesop, 600 B.C.).

It may be gathered from the foregoing that human nature has not changed much in twenty-five hundred years. But Aesop's contemporaries grew tired of hearing of their shortcomings and threw the author off a cliff into the sea. Which still further illustrates the unchangeableness of human nature.

The Case of St. Blaise.—The next mention we have found is that of St. Blaise, who lived in the reign of Diocletian (284 to 305 A.D.). This persecuting imperial fiend incarnate threw St. Blaise into prison, where he continued to heal the sick, who were brought to him. "Among these was a boy from whose throat St. Blaise plucked a thorn and saved the boy from suffocation." Then St. Blaise was beheaded by Diocletian's decree. It is small recompense that the worthy priest is still the patron saint of throats and that special services are held for him annually on his feast day. It is interesting to note that St. Blaise was Bishop of Sebaste, a diocese of still-persecuted Armenia. Once again we have evidence of the unchangeableness of human nature.

The Case of Matthew Arnold.—In the "Light of Asia" occur the following lines:

> "Then came—who knows?—some gust of jungle wind,
> A stumble on the path, a taint in the tank,
> A snake's nip, half a span of angry steel,
> A chill, a fishbone, or a falling tile,
> And life was over and the man is dead."

The question arises as to the source of Matthew Arnold's information as to the mortality attending the fishbone as a foreign body. The words are written as those of Gautama; but, of course, the writing is Arnold's. Prof. Ralph Elliott Blakeslee has given us the following note:

"It seems to me there can be small reason to believe the passage could be in the thought of Gautama, as Arnold used secondary sources for his poem, notably Spence Hardy's "Manual of Buddhism," and Samuel Beal's "Romantic History of Buddha." Arnold studied Eastern languages and mastered not only those of India but also Turkish and Persian. He translated several things from Sanskrit. Without doubt, he could have used original sources in his work with that equipment. However, there is no available record that he used any sources except the secondary ones noted."

Primary Echinococcus Disease of the Lung. G. Mariotti, *Policlinico,* No. 3, 1917.

The lesion was in the lower lobe of the right lung and the diagnosis was confirmed by radiogram. As spontaneous cure is exceptional, the author obtained access to the lesion by resecting the seventh, eighth and ninth ribs, suturing the pleura and lung to the chest wall to prevent retraction of the lung and also outline the field of operation. It was tamponed and the skin sutured over this. No attempt was made to remove the cyst membrane in the lung, as it was adherent and fragile. Ed.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

February 28, 1917.

Report of Two Cases of Atrophic Rhinitis Treated With Ichthyol Ointment. DR. ROBERT H. FOWLER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.)

Fibroma of the Ethmoid Region. DR. ROBERT H. FOWLER, New York City.

(To be published in a subsequent issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. DWYER said that he had seen enough of nasal fibroma to be very cautious in making a diagnosis. One need only remember the case of a young man presented before the Section a number of times by Dr. Harmon Smith, in which repeated diagnoses of fibroma were made but which finally developed into sarcoma, of which the patient finally died.

They are formed of similar tissues, and when specimens are taken from the front of the nostril one cannot be too positive in pronouncing it fibroma or sarcoma. Only in the last week Dr. MacKenty had operated upon a young man, performing a very extensive operation, for a tumor which had been diagnosed as fibroma for three years. Sections had been examined by a number of men, including Dr. Ewing, and himself, but recently it developed that the man had a rapidly growing sarcoma which had been diagnosed as fibroma.

The case reported by Dr. Fowler may possibly follow the same course, for with such an operation as was performed one cannot remove the cause, and a recurrence was to be expected. In Dr. Smith's case just referred to, the young man's nose was cleared out four or five times, but in one of the specimens decided sarcomatous tissue was found. The tissue examined in Dr. Fowler's case was taken from the front of the nose, and upon examination it looked like simple fibroma, but there was some cellular invasion, though not enough to base a diagnosis upon it. It would be interesting to see the outcome of this case, whether or not it remains quiescent. Hence, in the light of all the facts and the history of such cases we, as pathologists, do go slow in making an out and out diagnosis.

DR. FREUDENTHAL said that he had understood Dr. Fowler to say that he had cured the case of atrophic rhinitis simply by the application of ichthyol. If that is so, it was certainly a very rare occurrence, for we have all been using ichthyol for many years. Dr. Freudenthal said that he himself had been using the ichthyol recommended by a former member of the Section, applying it on tampons inserted for two or three hours. These cases improve under such treatment, but he had seldom seen a cure.

DR. HERZIG said that he had used ichthyol and several other medicaments, among them, 5 per cent Scarlet Red ointment. The latter, being used as nasal tampons and being in contact with the middle turbinate tissues, he had found to be the best alternative in atrophic rhinitis and also ozena. It is not a cure; the sinuses must be taken care of when diseased, etc. The tampons medicated with the 5 per cent Scarlet Red ointment, are allowed to remain in the nose for at least one-half hour. With this treatment he has been able to keep the nose fairly clear of scabs for a great length of time and keep the patient comfortable.

Dr. Guttman said that he employed cotton tampons without ichthyol as the best method of relieving the foul smell in these cases. Ichthyol helps, but the cotton pledgets in themselves form the best treatment.

Three Cases of Stricture of the Esophagus, Due to Accidental Swallowing of Concentrated Lye Solutions. Dr. C. J. Imperatori.

(To be published in a subsequent issue of The Laryngoscope.)

DISCUSSION.

Dr. Arrowsmith said that he had nothing to add to Dr. Imperatori's remarks in regard to slow dilatation. In these old cases of stricture from alkaline or acid burns he had found a very useful procedure to be the nicking of the edges of strictures which are often annular, with a little instrument which he had devised, which worked very satisfactorily. That kind of scar is so elastic and so resilient that it is difficult to get a start on it; in such cases the nicking can be done safely and is a great advantage. The object lesson which he had gotten from the specimen which he had showed last spring from a child that had come to the King's County Hospital, after having six months previously swallowed a solution of lye, by a bouginage done blindly, resulting in a small perforation and a slow infection with ultimate death, was a strong argument against blind bouginage. In another case which he had dilated at about the same time under the control of the eye, the child had done very well.

Dr. MacPherson congratulated Dr. Imperatori upon the results obtained in these cases. It was very difficult work and the results were admirable.

Report of Acquired Pharyngeal Stenosis: Operation With Prosthesis. Dr. Harry E. Isaacs.

(To be published in a subsequent issue of The Laryngoscope.)

DISCUSSION.

Dr. Coffin said that the case was one of an interesting class. He himself has had several such and they have given him much trouble. He then asked if he was correct in understanding Dr. Isaacs to say that he expected eventually that he could leave the instrument out. If so, Dr. Coffin disagreed, saying that those cases with a specific taint never lost the tendency to contract. The instrument seemed to be an extremely good one. Dr. Coffin then told of a patient whose case he had followed from childhood. It was undoubtedly a case of hereditary syphilis, and came under his observation when the patient was thirteen or fourteen years old. There was an ulcerative process involving all pharyngeal walls. Her father was a syphilitic. The child was put on antispecific treatment. The ulcers healed; this was followed by contraction until at fifteen or sixteen years of age, there seemed to be danger not only of asphyxia but a stoppage of deglutition. She was referred to Dr. B. F.

Curtis who, at St. Luke's Hospital, made a large skin flap from the throat wall which was turned into the throat through a large incision above the hyoid bone. The skin grew in place and the girl has an opening into the esophagus and larynx which has lasted very well. The naso-pharynx absolutely closed up. The last time he saw her she had a pipe in the naso-pharynx. It was not half as large in circumference as that just shown by Dr. Isaacs, but she was able to breathe very nicely.

Some years ago Dr. Nichols, a former surgeon at the Manhattan Hospital, devised a plan of treatment which many followed for a time, of putting in a seton and letting the tissue heal about it, and then cutting from the ostra to the free border of the contracting tissue—all to no avail. Contraction took place just the same. The only thing in the specific case seems to be to resort to some such device as Dr. Isaacs had shown. The sad thing is that the more negative the blood becomes as to the specific taint, the greater the contraction.

Dr. McCullagh spoke of a method of operating on these cases devised by Dr. J. E. MacKenty some four to six years ago. A patient had come to the clinic with a congenital atresia so far as could be learned. There was no history of traumatism. Wassermann was negative. The opening was just large enough to pass a probe. Tongue-shaped flaps were cut on the posterior wall of the pharynx, the inner borders of which corresponded to the opening, the adhesion was separated laterally with scissors and each flap was turned up posteriorly over the cut edge. These flaps were held in place by a mattrass suture which had been passed through the end of the flap, the ends of this suture being threaded through a curved needle which was passed through the soft palate and secured by shot. By this procedure there were no raw edges left. The denuded surface on the posterior pharyngeal wall healed by granulation.

For a while following the operation the girl used a dilator occasionally. Dr. McCullagh said that he had seen this patient within the last month and the nasal breathing was well established, and had remained free ever since the operation. Incidentally, it was very interesting to see the development of the turbinates after the establishment of the nasal breathing. They were very rudimentary at the time of the operation, for so far as she had known she had never had any nasal breathing. After the operation a marked hypertrophy of all the turbinates took place; she has had several turbinotomies and much removal of tissue. This patient after six years, and without any cumbersome apparatus, has perfect respiration. There is no necessity for anything except an occasional dilatation. Dr. McCullagh said that this patient had been presented before the Section by Dr. MacKenty, and was the only one which he himself had been able to follow up.

Dr. Freudenthal told of a case he had had years ago which was not of specific origin—a case of total adhesion following adenectomy. He did not try slow dilatation for experience had taught him that it was of no use in such cases and that a radical operation must be done. He made a large opening and pulled the soft palate back by strings introduced through the nasal passages, leaving them in place for eight days after the cicatrization set in, and it remained open. The patient was operated upon ten or twelve years ago, is now married and has a healthy child. This method of operation gave good results in this instance, and it was worth trying.

Dr. MacPherson said that he had had five of these cases which he had treated with fair success. Two of them occurred in private practice, and three were clinical cases. Some years ago Dr. Harmon Smith devised a plan of putting rubber catheters through the nose and mouth, fastening them on the cheeks with adhesive plaster—putting one on each side and cutting between. At first he tried gauze, but later he found the catheters to be better. In any case, the objection is that you don't keep the catheters to the lateral walls on each side, which is the idea of the old-time seton that Dr. Coffin had referred to.

Dr. MacPherson said that it had occurred to him to put the catheters in and keep them in position by not severing the intervening fibrous neck getting the result that Dr. Nichols aimed at, leaving them in ten to twelve days, and then separating. During these ten or twelve days a certain amount of adhesion took place which prevented the cicatrization creeping in from the sides to the center. At the end of ten days the neck was cut between the catheters and the catheters pulled, pulling them a little tighter, with the object of keeping the soft palate away from the posterior wall. Three of the cases treated by this method were non-specific, two were specific. Three were due to adenoidectomy and tonsillectomy operations performed without an anesthetic and producing traumatism. Four patients are in very good condition to-day, with good breathing and drainage and are comfortable; they do not have to use any instrument. The fifth was operated upon while a + Wassermann was present and is under the care of Dr. Bruce Ferguson. I do not know the end results.

For some time after removing the catheters it was necessary to watch patients and break down adhesions if required.

Dr. MacPherson said that recently another case had come under his observation, and after talking it over with Dr. Clarence C. Rice it had been decided that in this instance instead of employing the catheters coming through the mouth and nose the operation would be modified and a short tube used, to be held in place by buttons or a knot of gauze or something that would absolutely secure it, so that it could not slip up or down, leaving that in situ for ten days, then separating the neck, but they had not thought of anything better for the succeeding ten days than the catheters which had been mentioned, for the purpose of holding the soft palate away from the posterior pharyngeal wall.

The syphilitic cases are very difficult indeed. Where there is a negative Wassermann preliminary to operation, there is a pretty good chance of preventing them from cicatrizing. Dr. Isaacs was to be congratulated on the originality shown in treating the case reported. A great many types of instruments have been devised for this condition, but this idea seemed to be more adaptable than most on account of the patient being able to insert and extract it, with the consequent liberty to leave it in situ indefinitely.

Dr. Hurd told of a non-specific case which he had treated some years ago, where the patient had only a very small hole that she could not breathe through. He split it so that a silver half dollar could be slipped in, and she wore it for several months, during which time the coin kept perfectly clean.

There is always a certain amount of contraction from each side. In this instance, the silver half dollar happened to fit and did not get foul, and there was practically no danger of its slipping out. If a proper sized metal piece is fitted in it will not drop down, but some force will have to be exercised in removing it with the forceps.

Rib Transplantation for Nasal Deformity. Presented by Dr. Imperatori for Dr. Scruton.

(Two cases were presented, one of them being a luetic case.)

DISCUSSION.

Dr. Arrowsmith said that his experience in this work had been very limited, but that he had treated a few syphilitic cases, one of which showed a very good result.

Dr. MacPherson said that so far as transplants are concerned, no one can say very much about the results inside of a year. The cases look very well for the first few months and may be all right, but in a year or so the bones may be absorbed. Radiographs taken during the succeeding months may show successful grafting taking place or gradual absorption.

Transillumination of the Larynx. Dr. L. M. Hurd.

Dr. Hurd said that this was a demonstration of a method, not of a case. Recently Dr. Spencer had sent out a circular asking about transillumination of the larynx. He himself had happened upon this method in an accidental way. While using the bronchoscope he saw the light through the skin, so he put the light on the outside and looked with the mirror through the inside. The condition presented is rather novel and peculiar, and if there is any infiltration there is a certain amount of contrast between the darker and lighter spaces, and if there is anything under one of the vocal cords you can see something darker in that part. Dr. Hurd said that he had no idea of claiming any priority in this matter over Dr. Spencer, as something of the kind had been done by Lennox Brown some 30 years ago.

DISCUSSION.

Dr. Freudenthal said that if any one would look up the proceedings of the Section 27 years ago it would be found that he had demonstrated this method together with transillumination of the antrum at that time. That was the first demonstration of this kind in the United States. It was in 1889 or 1890. It was not his discovery or Lennox Browne's, but was first brought to our notice by Voltolini, of Breslau. He had only modified it so that it would conform better to the formation of the larynx. The picture obtained was really beautiful. At that time it was considered important to find out whether by transillumination you could make a differential diagnosis between a malignant and a benign neoplasm, and he was able to make the diagnosis of a cyst in one instance. Dr. Spencer had sent him also a circular, and he had written to Dr. Spencer and reported this case: The man had been a patient of Dr. Asch's, then went to Dr. Lefferts, and then came to Dr. Freudenthal. The former two gentlemen had made a diagnosis of aneurysm. The patient was suffering with a terrible stridor that could be heard nearly a block away. It is true there was some pulsation in this case; but Dr. Freudenthal said that he made a diagnosis of carcinoma and the man died not long afterward. It was then found that he had a carcinoma, below which was an aneurysm. It was an extremely interesting case.

Dr. Hurd said that he had simply brought the matter up because he thought it interesting. He had picked it up independently of any one, and had not then known what Lennox Brown did years before. The picture revealed was interesting, and you could look all the way down the wind pipe, etc.

Tooth Plate Impacted in the Upper Esophagus. Dr. H. Arrowsmith, Brooklyn, N. Y.

On December 24th, 1916, I was called to see J. C., aged 40, admitted to my service at the King's County Hospital, with the history that during his Christmas celebration, commencing the previous evening, he had swallowed his tooth plate, which beside interfering considerably with his breathing, hampered him in his plans of having a "real" merry Christmas, by making it very difficult for him to swallow anything else. I found the patient quite dyspneic and in considerable pain. Being still decidedly inebriated he was not, however, sensitive, and a very little cocain, locally applied, produced sufficient analgesia for endoscopy. The tooth plate lay diagonally antero-posteriorly. The base, concave side up, being deeper under the crico-pharyngeal constriction and the teeth impinging on the trachea, which thereby was materially obstructed. Notwithstanding its short sojourn—18 hours—there was considerable edema about the foreign body, and it was very difficult to expose and grasp the edge lying under the constriction. After vainly trying several laryngeal and esophageal specula I succeeded with a Moser esophagoscope in exposing the upper border of the plate and removed it with alligator forceps. The patient was able to leave the hospital and resume his festivities on Christmas morning. The plate measures 1½ by 1¼ inches, with two central incisors attached.

Dr. Arrowsmith also presented another foreign body—quite a good-sized opaque white stone—which had been removed, and read an account of it.

DISCUSSION.

Dr. Imperatori said that he wished to corroborate what Dr. Arrowsmith had said about the Mosher esophagoscope and doubted very much whether the object could have been removed as successfully with any other instrument. As has been pointed out by Dr. Jackson and several others, to simply grasp a foreign body and pull is the most dangerous procedure that we know of in endoscopy. The object should be manipulated so that its position will be such on withdrawal that its edges will not tear or injure the esophagus.

Undoubtedly the cessation of respiration was due to an inhibition of respiration, produced by the passage of the foreign body—when being extracted—and passing through the upper esophagus, behind the larynx. The very act of swallowing is an inhibition of respiration, and if an inhibition can be continued long enough and to this we have added the pressure on the esophageal ends of the vagus, a respiratory cessation may issue.

Dr. Imperatori said that he would not undertake to instruct Dr. Arrowsmith, who had been his teacher and guide in things endoscopic, still it would seem that the passing of a Jackson bronchoscope and attaching the oxygen tank to the special tube, which is on all these instruments, he might have avoided doing a tracheotomy.

Radiograms help considerably. Not so much in locating the foreign body, but in demonstrating its position in relation to the long axis of the esophagus. This case shows the value of the ballooning esophagoscope, particularly, when a radiogram is not available.

Dr. Law said he would like to utter an objection to Dr. Arrowsmith's remark that he thought the x-ray would not have shown the stone. He himself believes it would.

The Roentgenogram made with the stone directly on the plate shows a dark spot surrounded by a lighter area. This means that the penetration of the ray was less in the center than around the edge, because the stone is much thicker in the center. The edge shows lighter also, because the exposure was made outside the body and possibly with a greater amount of exposure than would have been given with the stone in the body.

He was inclined to think that a plate made at the time, with the proper exposure, would have shown a clear outline of the foreign body, particularly as it was situated in a pneumatic region.

Dr. Arrowsmith asked if Dr. Law had ever seen any picture of a stone.

Dr. Law replied that he had not seen one of a stone of that size.

(a) Operating Window for the Mosher Esophagoscope; (b) A Laryngeal Medicator for the Patient's Use. Dr. Hubert Arrowsmith.

This was adapted from Dr. Yankauer's laryngeal medicator which is a most valuable aid for a patient's home treatment. Its chief drawback is the lack of durability of the rubber bulb, and as most of the medications are of oil, that is serious. Dr. Arrowsmith's device, a small asbestos-packed syringe, replaces the rubber bulb and as a modification of Dr. Yankauer's medicator it will be more durable and may work out a little better.

DISCUSSION.

Dr. Imperatori said that he had used the Yankauer laryngeal medicator a great deal, but thought that this modification of Dr. Arrowsmith's was an improvement. The rubber bulb on the Yankauer instrument soon gets out of order, particularly when oils are used, making it difficult to get the medicament up in the tube or getting the right amount injected in the larynx.

An Improved Krause Snare, Particularly Useful in the Removal of Posterior Tips. Dr. Charles J. Imperatori.

The modification consists in the addition of serrated edges to the end of the canula. A number of men have tried it and found that it is very satisfactory in the removal of posterior tips.

Dr. Imperatori said that he had used Dr. Mial's snare, but in his experience he had found that the tip of the turbinate was liable to slip out after it had been engaged, whereas with this instrument it stays caught, within the wire.

He thought a combination of the two instruments would certainly make an ideal one for removing the posterior ends of the inferior turbinate.

Stenosis of the Larynx Following Cut Throat. Dr. A. P. Voislawsky.

Mr. B. B., age 44, came to me in February complaining of great difficulty in breathing and continual hoarseness. One month previous he had been cut on the neck in the region of the thyroid cartilage with a razor. He was removed to St. Vincent's Hospital, Staten Island, where the wound was superficially sutured, resulting in primary union. After operation the patient had slight difficulty in breathing and since leaving the hospital he has been gradually getting worse.

Physical examination showed a constricting band below the vocal cords occupying the anterior third of the lumen of the larynx.

I sent the patient to St. Luke's Hospital in Dr. Delavan's service and on February 7, where, with the Lynch suspension apparatus and under local anesthesia, the fibrous band was removed. The patient was able to talk and breathe freely within a few days and presents himself this evening, seven weeks later, with a fairly good voice and no respiratory interference.

DISCUSSION.

Dr. Forbes said that he would like to know the method used by Dr. Voislawsky in approaching the band, and the type of instrument employed,—the Lynch being preferable,—and whether there was any difficulty experienced in handling the instrument; also whether the bleeding was annoying.

Dr. Harmon Smith asked if he was correct in undertsanding that the original cut was across the thyroid cartilage, and if Dr. Voislawsky had removed the cicatricial band from below the vocal cords? If so, he did not understand why they were so much lower than where the cut was inflicted.

Dr. Voislawsky replied that the cut was slanting.

Dr. Smith said that these were interesting cases, although the outcome, in the majority of instances, was favorable. He had presented some years ago, a case embodying similar conditions, where an attempt at suicide had been made with a razor, leaving a permanent fistula in the thyroid cartilage and likewise severing the left vocal cord from its attachment anteriorly. He did a thyrotomy, attached the vocal cord in place and permanently closed the fistulous opening. The subsequent results were most pleasing, as the patient, inside of a year, was enabled to talk so that he could be heard distinctly across a room. In the course of three years, which observation was made just recently, it was noticed that the movement of the left side was almost as free as that of the right, although the left recurrent nerve had been severed at the time of injury. His voice now is remarkably good.

Dr. Voislawsky said that he did not know whether it had been noticed in examining the patient that his upper incisor teeth were broken off; this made it a very easy matter to suspend him with the ordinary suspension apparatus and Lynch attachments. The larynx came into view very easily indeed, more so than in any other case he had had, except where the incisor teeth were missing. He used the straight forceps and punched away until he cut through.

Dr. Lynah asked what was the duration of the laryngeal stenosis, and how long after the injury was the endolaryngeal operation performed.

From what he could see with the mirror the lesion involved the cricothyroid membrane and the vocal cords were not involved. There was, however, ample room for good respiration.

Dr. Voislawsky replied that the cut was beneath the cords. Apparently this happened about the time of the injury and he did not come under observation until February. Dr. Voislawsky said that he had had a number of these cases, and apparently the object of the house or ambulance surgeon, when they are brought into the general hospital is to close the external wound. It is very surprising how little attention is paid to the surgery of the larynx when the patient is first seen. The band seemed to be just above where the cut was,—at an angle of about 45 degrees.

Chronic "Infiltrative" Laryngitis. Dr. H. H. Forbes.

The patient, a man, 51 years of age, came to the Post-Graduate Hospital a year ago with a history of hoarseness dating back a year and a half, making a total of two and one-half years. He was a peddler and used his voice excessively. The hoarseness came on gradually, with loss of voice but no loss of weight, and his general health did not suffer. A year and eight months ago he went to one of the hospitals in Brooklyn; his blood was examined; report, negative; a portion of the growth in the larynx was removed, and reported by pathologist to be a chronic inflammatory process.

After his admission to the dispensary of the Post-Graduate Hospital, local applications were made, and his blood was examined twice; reports were negative, but he was put upon mixed treatment with no improvement. Four months ago, under suspension laryngoscopy, a portion of the growth was removed from the inter-arytenoid region, sufficient to include in its margin normal tissue, for comparison. The pathologist reported a chronic inflammatory process. Since then the patient's voice improved considerably, but within the last ten days the picture has changed entirely and instead of having a simple chronic infiltration there is now an ulcerated area in the upper part of the glottis. Dr. Macpherson suggested that another Wassermann test be made, and the report received in the afternoon was that it was negative. This is probably the fifth blood examination that has been made. The question of tuberculosis was considered, but the medical men reported the case negative. No x-ray had yet been made. The case was printed on the program "for diagnosis" and that has not yet been determined definitely, but within the last two weeks, the additional element of ulceration of the epiglottis has appeared. So far as known, the patient has had no other treatment at any other hospital, nor has he been suspended within the last two months, so there was no reason to suspect a trauma as the cause of the epiglottic condition.

In reply to an inquiry as to whether the sputum had been examined, Dr. Forbes replied that it had, and the report was negative.

DISCUSSION.

Dr. Harmon Smith said he saw no reason for classifying these ulcerative cases as either tuberculous, syphilitic or malignant. There is no reason why there should not be simple ulcerative conditions in the larynx as upon other mucous membranes. The patient has had no pain, no temperature, no indications of syphilis, and it seemed reasonable to suppose that he might have an infiltration from an overworked larynx, or it might result from some hyperacidity or acidosis. We are too prone to classify all laryngeal involvement in one of the three classes mentioned, which would not necessarily be done were the lesion in some other part of the respiratory tract.

Dr. Ernst Danziger asked Dr. Smith how many cases he had seen that he could not classify under one of these three classes.

Dr. Smith replied that he had seen many, which had been confirmed by other diagnosticians and that it was time some one should establish the fact that not all such lesions necessarily come within one of these three classes mentioned.

Dr. Danziger said that a negative Wassermann does not necessarily exclude syphilis. Only recently he had seen such a case. It is not sufficient to make the blood test in these doubtful cases; in some cases a spinal puncture will help out, but the blood alone does not exclude syphilis.

Dr. Carter cited a case to illustrate the principle that it might be a simple ulceration. His patient was a young man who had been seen by a distinguished specialist in Cincinnati, who had referred him for observation, saying that the condition was probably either tuberculous, syphilitic, or malignant, but as the patient was a traveling man he had not had time to make the diagnosis. Dr. Carter said that he advised his patient to rest his voice completely for ten days, using simple applications of argyrol, and that the ulceration practically healed up inside of two weeks.

Dr. Macpherson said that Dr. Smith had suggested the diagnosis of scleroma.

Dr. Smith said that as the patient had come from Southern Russia, it should unquestionably be considered as a possible diagnosis.

Dr. Forbes said that scleroma had been excluded.

Hematoma of the Pharynx Following Operation. Dr. M. F. Jones (by invitation).

The patient was operated upon for goitre at the Nose and Throat Department of the Post-Graduate Hospital on January 24. The next day Dr. Jones was called to see the patient, and found him suffering with obstructed breathing; the tissues of the throat were edematous, but there was no discoloration. The edema prevented a good view of the cords, but the left cord was visible. The trachea was pushed to the left, and most of the mass was to the right. The patient was in a serious condition from dyspnea, and in this state it was a question as to whether it was best to put in a laryngeal tube or to do a tracheotomy. Intubation was ruled out on the ground that it would not help the edamatous tissue high up in the throat. Tracheotomy was a last resort, as the tissues were swollen and of course, right after the operation, were filled with blood. The patient was therefore put under treatment with a tracheotomy set by the bedside in case of necessity. He was treated with inhalation of tincture of benzoin and an ice coil. After fifteen minutes, the inhalations were discontinued; and at the end of two hours the ice coil seemed to have relieved the condition considerably. In the morning of the 26th, he was much better.

In the afternoon of the 26th, when seen with Dr. Macpherson, there was visible a distinct hematoma, and the swelling was discolored posteriorly. The chest and neck behind the ear showed a large hematoma, which extended down as far as the umbilicus, being higher on the right side than on the left.

The patient left the hospital in about two weeks, and returns to-night with somewhat questionable findings; probably the right cord would be found to be in the cadaveric position, and the other one movable, although slightly impaired. The right ventricle was enlarged and so also is the right arytenoid.

DISCUSSION.

Dr. Macpherson said that he saw the case in the wards and the question arose, what should be done to relieve the dyspnea? There was marked dyspnea, and a tremendous hematoma. The question was whether to open the hematoma pressing against the larynx which was causing the dyspnea and endangering the life of the patient. It was finally decided to watch him carefully and endeavor to avoid operation and probable infection. It was a matter of watching the patient very closely and being ready at a moment's notice to perform a low tracheotomy or if necessary to open the tumor. The oozing gradually stopped and the dyspnea subsided.

Lupus of the Larynx. Dr. J. J. King.

L. W., age 15 years, was referred to me by Dr. Virgil P. Gibney, on March 9, 1917, with the history of loss of voice, following a cold three years ago. As you see, he is a well nourished youth, in apparently good health.

His mother says he had a cold three weeks ago and then his voice gradually disappeared. He cannot speak above a low whisper. His general condition is good and he has been increasing in weight. He has no pain in his throat, either upon eating or swallowing or at other times. His appetite has always been good and he has no fever.

His father and mother and two brothers and two sisters are alive and well. One brother died four years ago of tubercular meningitis.

The examination of his chest is negative for clinical signs of tuberculosis. Several Wassermann tests have been negative.

The x-ray report of his chest, made by Dr. Darling, is as follows:

In the left lung, running from the root of the upper lobe towards the second to the fourth ribs posteriorly, a fan shaped area of cloudy appearance, strongly suggesting tuberculosis. Extending from the root of the lung downward, in the region of the third and fourth ribs anteriorly, is a diffused area about the size of a half dollar, strongly suggesting tubercular involvement.

In the right lung, extending from the root of the lung towards the third to the fifth ribs posteriorly, is a fan shaped area with present or past tubercular involvement.

None of the areas in question are easy to make out, but the more the chest is studied, the more convinced I am that he has definitely tubrcular lungs, the left lung showing the most amount of involvement. At the root of this lung, there is some small, irregular calcification, which bears out the involvement towards the periphery.

The examination of his larynx shows a slight area of inactive or healed ulceration of the upper left side of the epiglottis, a very large mass of infiltration on the right false vocal cords and in the interarytenoid space.

It seems to me that this is a typical case of lupus, with its history of loss of voice and no other signs or symptoms. I do not feel justified in making a diagnosis of tuberculosis from the few suggestive signs as shown by the x-ray examination, and Dr. Darling is also unwilling to make such
the lungs to be ce-existent with lupus of the larynx.
a diagnosis from his plates. It is, however, possible for tuberculosis of

DISCUSSION.

Dr. Hurd said that the more larynges one sees the less he feels he knows about them. He did not think that this child could have tuberculosis of the larynx and be in such excellent physical condition. Syphilis would probably account for the condition, and is the most frequent cause of these infiltrations of the larynx; it will attack and destroy a part of the epiglottis. He was strongly inclined to think that the infiltration in the larynx was a syphilitic granuloma, notwithstanding the negative Wassermann.

Dr. Freudenthal said that he had made only a superficial examination of the case, but that he would advise taking out a piece of the tissue and having it examined. It might after all be tuberculosis, for he had seen three or four cases in which the epiglottis was eaten away just as in a specific case, and after all it proved to be tuberculosis. This may prove to be a similar case.

Dr. Hurd asked if the epiglottis was healed while the rest of the larynx was active?

Dr. Smith said that he had seen some cases in the Loomis Sanitorium while there as an interne, where the condition of the larynx was similar to this case, likewise spots in the lungs, as shown in the x-ray just as in this case, and there was absence of pain, just as in this instance. Where the cartilage is involved there is apt to be pain. Dr. Smith said that he was inclined to think the case was lupus rather than tuberculosis. The boy might have healed areas of tuberculosis in the lungs and still have lupus of the larynx. As long as the case had taken such good care of itself, he would be inclined to leave it alone, except the administration of nourishing diet and general hygiene.

Dr. Carter said that last fall he had shown a case at a meeting of the section in which two-thirds of the epiglottis had been entirely destroyed by tuberculosis. The margin of the destroyed portion had healed; at the same time there was an active process going on in the larynx and in the lungs. It was strongly probable that this patient had died within the last few months, for he was in very bad shape when last seen in the clinic at Gouverneur's Hospital.

Dr. Lynah supported Dr. Hurd's opinion that the condition was specific, and said he thought it was a case of the so-called condylomata, which are seen frequently on other mucous membranes than in the larynx.

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

HAY-FEVER AND HYPERESTHESIC RHINITIS.

DR. WILLIAM SCHEPPEGRELL, New Orleans, La.

While hay-fever is a form of hyperesthesic rhinitis, there are some cases in which pollens are not responsible. Probably, however, the proportion of true hay fever is much greater than is generally supposed, especially in cases in which the rhinitis develops outside of the usual hay fever season and is due to unfamiliar forms of pollen.

In New Orleans, for instance, there is a form of hay fever which is active in February and whose relationship to hay fever was not recognized until we found it due to the pollen of the annual meadow grass (*poa annua,* Fig. 1), a grass which in higher latitudes does not bloom until June. More obscure than this is a form of hay fever prevailing in December and January, and which we found to be due to the pollen of the false wormwood (*Parthenium hysterophorus,* Fig. 2), which is a perennial bloomer in Southern Louisiana, and whose pollen is found on our atmospheric-pollen plates during these months. Both of these forms of hay fever represent only a small percentage of the total number—about five per cent and two per cent respectively—but the establishment of the active cause was necessary not only from the standpoint of prevention and treatment, but also to establish the complete relationship of pollens to hay fever.

More recently in Texas, the cause of a local outbreak of hay fever in Austin during the month of January was traced to the pollen of the mountain cedar (*Sabina sabinoida*). Dr. S. N. Key, who reported these cases, exposed our atmospheric-pollen plates which were then sent to our biological laboratory in New Orleans for examination. The plates (Fig. 3) show an average of 27 pollen per square centimeter, these being identified as those of the mountain cedars which were pollinating at that time.

These cases, developing during the months of December, January and February, were formerly not recognized as hay fever but were supposed to be hyperesthetic rhinitis of undefined origin. The scientific application of the atmospheric-pollen plates and the biological tests enabled us to establish the diagnosis of hay fever and to determine the pollens responsible for the attacks.

Hay Fever and Dust.—It is well known that persons suffering from hay fever have their symptoms aggravated by the dust of a carriage or automobile drive, and this was therefore made the subject of a series of tests. The atmospheric-pollen plates exposed on these trips not only showed atmospheric-pollen mixed with the dust but also that these were present in large proportions. A photomicrograph of a portion of one of these plates is shown in Fig. 4.

We also exposed a series of these plates on railroad trips during the hay fever season. When the cars passed through localities where hay fever weeds were found in abundance, the records showed a large increase over the pollens ordinarily found in the air, this being sometimes over 100 per cent. In passing through large forests, away from cultivated lands and over water and marshes, as in certain portions of the coast of Louisiana, the number of pollens was greatly reduced.

The following case illustrates the border line between ordinary hyperesthetic rhinitis and true hay fever. The patient, a man of 32 years, has his office in New Orleans, but resides in the country, about forty miles from the city. Ordinarily he makes these trips without discomfort. He also visits the fields in the country while the ragweeds are pollinating, without developing hay fever. During the hay fever season, however, he suffers from severe attacks of hay fever while traveling on the trains. In other words, the dust and cinders of the trip are ordinarily not sufficiently irritating to annoy him, and the pollens of the ragweed, also under ordinary conditions do not cause hay fever, but the combined effects of the dust of the train and the atmospheric-pollens invariably causes an attack of hay fever. As soon as the pollen disappears from the air, he again travels without discomfort.

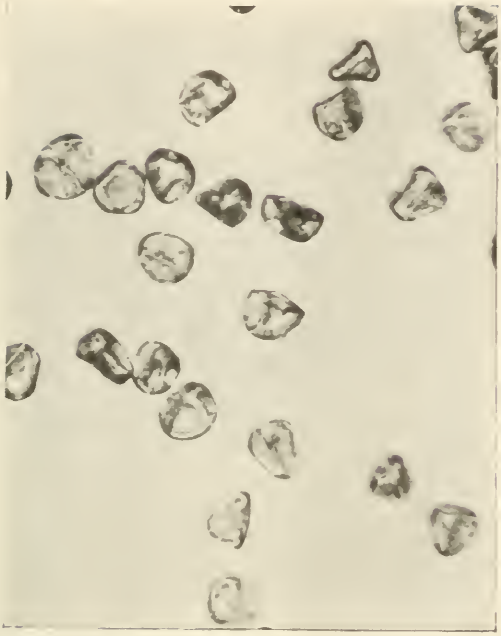

Fig. 1. Pollen of June grass (Poa annua). A cause of early (February) hay fever. Magnified 500 diameters.

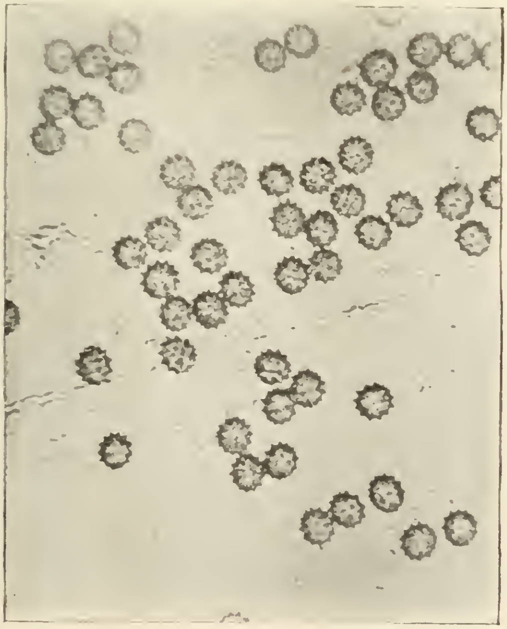

Fig. 2. Pollen of False Wormwood (Parthenium hysterophorus). May cause hay fever during any month of the year in localities where it is found. Magnified 500 diameters.

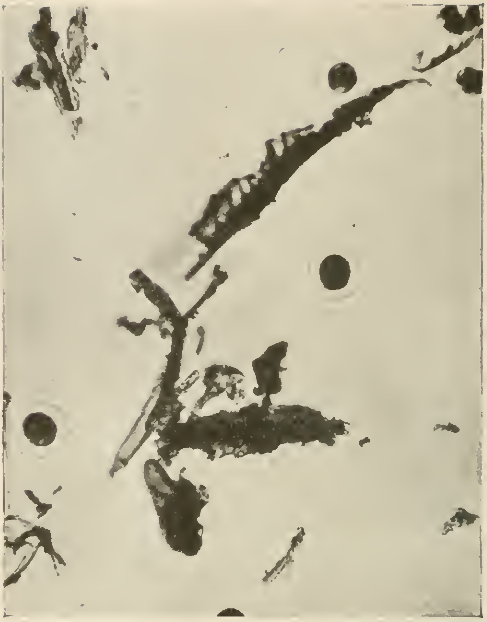

Fig. 3. Atmospheric-pollen plate exposed at Austin, Texas, showing pollen of Mountain Cedar (Sabina sabinoida). Magnified 500 diameters.

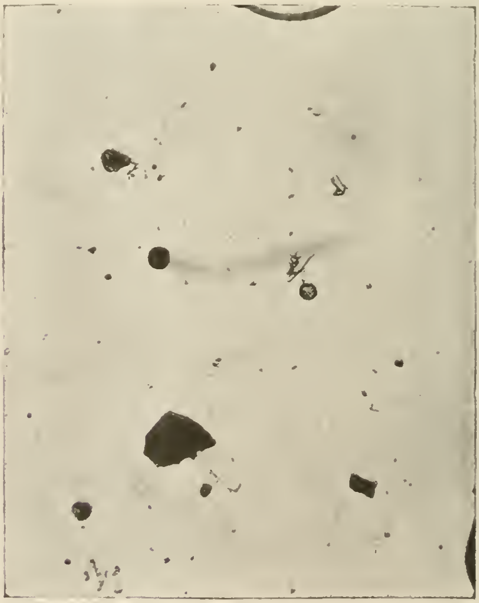

Fig. 4. Atmospheric-pollen plate exposed on automobile trip and showing rag-weed and grass pollen. Magnified 250 diameters.

Fig. 5. Atmospheric-pollen plate exposed on railroad trip showing rag-weed pollen. Magnified 250 diameters.

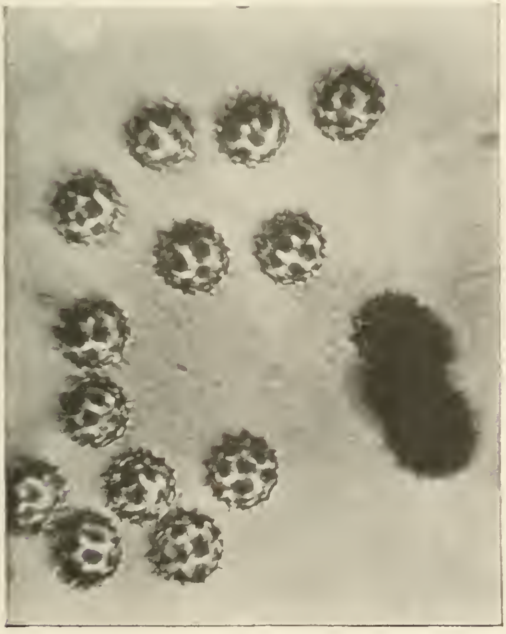

Fig. 6. Spiculated pollen. Group of Giant rag-weed (Ambrosia trifida) on atmospheric-pollen plate. Magnified 1,000 diameters.

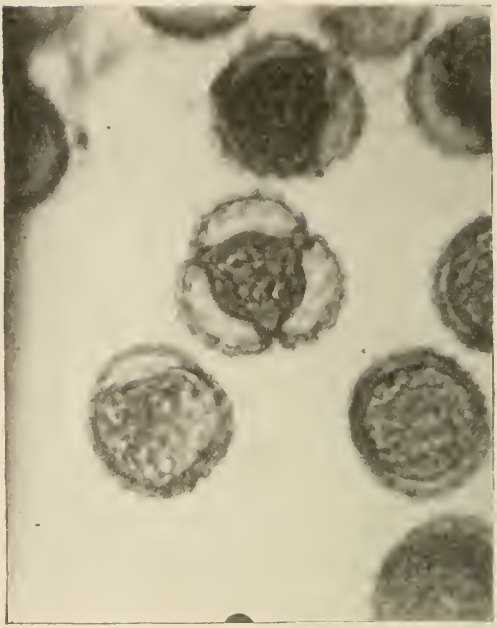

Fig. 7. Pollen of Common rag-weed (Ambrosia elatior) showing pores for the emission of the germinating tubes and of the pollen contents. Magnified 2,000 diameters.

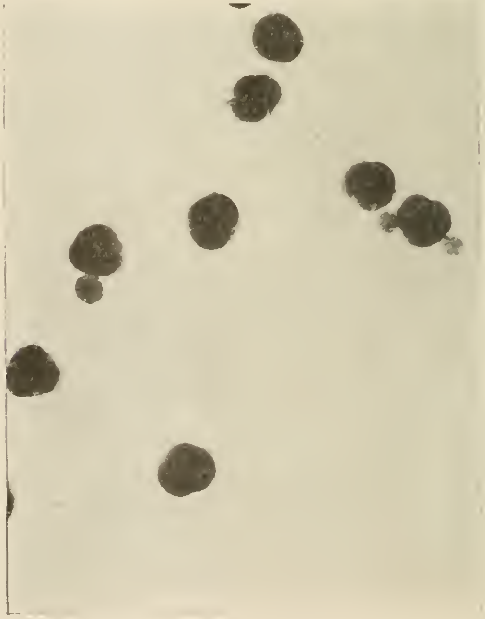

Fig. 8. Pollens of Absinth Wormwood (Artemisia absinthium) showing ejection of a portion of their contents from the germinating pores. Magnified 500 diameters.

An atmospheric-pollen plate was given him to expose during the trip, a photomicrograph of a portion of this being shown in Fig. 5. The record showed a high percentage of pollen, almost twice as high as our New Orleans station records for these pollens at the same time.[1]

During the hay fever season, even the dust of the houses is impregnated with the hay fever pollens. The series of atmospheric-pollen plates exposed at various times show that the air of the ordinary house has an infestation of hay fever pollens varying but little from the air out of doors. As the windows during the hay fever season (August-September) are usually open this is really surprising.

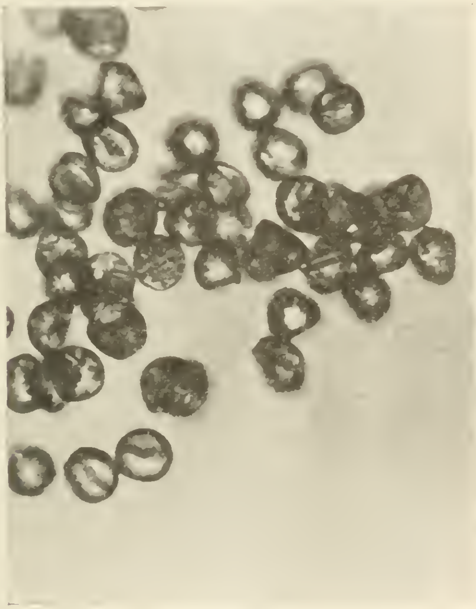

Fig. 9. Pollen of sedge (Cyperus rotundus "nut-grass"). The dense covering of the sedges make them resistant to the discharge of their contents. Magnified 500 diameters.

In most of the above cases, the attacks of hay fever are attributed to hyperesthetic rhinitis, the cause being supposed to be the ordinary dust. A careful investigation of such cases will show that a large proportion are really due to atmospheric-pollen and are therefore true hay fever.

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(1) "Hay-fever and Hay-fever Pollens." W. Scheppegrell, M. D., *Archives of Internal Medicine*, June, 1917.

Effects of Rain on Hay Fever Pollens.—It is well known that a continued rain affords relief to hay fever patients. The action of the rain is to cause precipitation of the pollen floating in the air and prevents more pollen from leaving the plant during the continuation of the rain. If this continues long enough to allow the effects of inhaled pollen to pass off, the patient has relief until the rain is over and a wind of sufficient velocity again infects the air with the hay fever pollens.

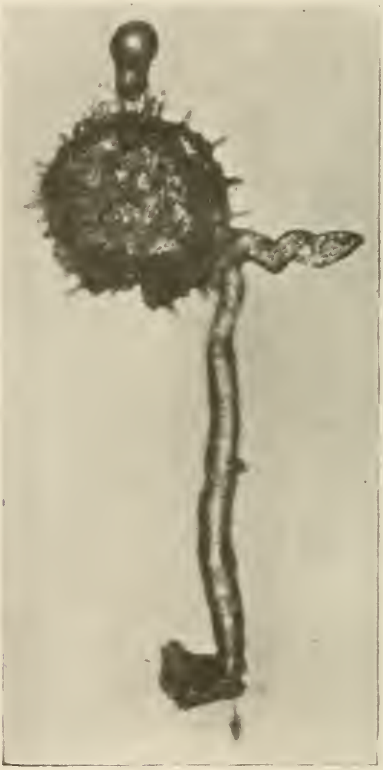

Fig. 10. Pollen of Okra (Hibiscus esculentus) with germinating tubes. Magnified 200 diameters.

It has been supposed that the pollens which are precipitated by the rain may again be carried into the air and continue their irritating effect. This, however, is not the case. The principal varities of pollen have been tested in our biological laboratory and it has been found that the submersion of the pollen in a large amount of water removes their toxic properties. After the pollens have been exposed in this way, they have been tested in large numbers in the nostrils of hay fever subjects without apparent effect. Several hundred pollens were frequently inhaled without effect by hay fever subjects who ordinarily react to a small number of fresh pollens.

The result of this investigation is of practical value in certain cases of hay fever. When a hay fever subject has been operated on or is seriously ill from other causes so that the irritation of sneezing and other symptoms of hay fever would not only be annoying but even dangerous, the patient may be protected by having the windows of his room screened with thin cloth saturated with water. All pollens coming in contact with the moist cloth would not only be arrested but be robbed of their toxicity.[2]

When this is not practical a special inhaling device based on the same principle may also be arranged for the patient for the same purpose.

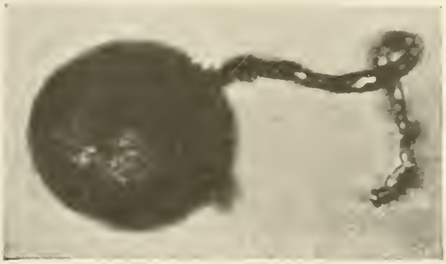

Fig. 11. Pollen of Careless weed (Amaranthus spinosus) with germinating tube. From atmospheric-pollen plate. Magnified 1,000 diameters.

Character of the Reaction.—In hay fever we have both the direct and indirect effect of the pollen inhalation. In the case of the spiculated pollen the direct effect may be due to the mechanical irritation of their spicules (Fig. 6). In others it may be the local irritation of the mucous membrane from the solution of a portion of the pollen contents.

The manner in which the dissolved extract of the pollen leaves the pollen varies in different species and depends on the formation of the external coat (extine). In the common ragweed (*ambrosia elatior*) there are three openings or pores shown in the photomicrograph (Fig. 7) and which are intended for the emission of the germinating tubes, through which the dissolved material may escape.

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(2) "Toxicity" here refers to the positive reaction in hay-fever subjects. The existence of a true toxin in these pollens is still under investigation.

In the worwoods[3] (*Artmisias*) this is not only the case but the process can easily be observed under the microscope. In the photomicrograph (Fig. 8) the pores are shown and a portion of the contents which has been ejected from these points.

Before the severity of the reaction of the *artemisias* was known, instead of making an extract of the pollen for the initial test, the ordinary pollens were used. Immediately there was a violent reaction which lasted over twenty-four hours. As these pollens are not spiculated, in which case we frequently have a rapid primary reaction, this prompt reaction was difficult to understand until the test was made under the microscope. It was then found that the injection of a warm, normal saline solution was immediately followed by the ejection from one, two or three pores of the pollens a portion of its contents as shown in the photomicrograph, and which, in view of the toxic character of its contents, explained the rapidity of the primary reaction.

In the sedges the extine is usually dense so that the extract is given off with difficulty. This is probably the reason for the inertness of the sedge pollen (Fig. 9) in hay fever. The grasses, on the contrary, although closely allied to the sedges, have an extine of remarkable porosity, and they all have a marked hay fever reaction.

It was at one time supposed that some portion of the nasal reaction in hay fever was due to the development and action of the germinating tube of the pollen.

This development of the germinating tube or tubes is essential to the function of fertilization which is the primary object of the pollen. In the photomicrograph (Fig. 10) there is shown the pollen of the okra (*hibiscus esculentus*) which we dissected from the stigma of the flower. The germinating tubes are shown in three stages. Figure 11 shows the pollen of the careless weed (*amaranthus spinosus*) containing a single tube. This specimen was found on an atmospheric-pollen plate, the pollen evidently having been blown from the stigma of the plant.

The development of these tubes is always a slow process and could in no way explain the hay fever reaction which always develops within a half hour and frequently almost immediately. A conclusive proof, however, is that in the microscopic examination of the hay fever secretions made at our biological laboratory in which hundreds of pollens were examined, no case of a pollen with a developed germinating tube was found.

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[3] The wormwoods replace the rag-weeds as the principal cause of hay-fever west of Kansas. "Hay-fever; Its Cause and Prevention, in the Pacific and Rocky Mountain States." W. Scheppegrell, M. D., United States Public Reports, July, 1917.

The Importance of a Correct Diagnosis.—In all cases of hyperesthetic rhinitis it is important to determine that it is not some obscure case of hay fever. The fact that the attack occurs outside of the usual hay fever season is no proof that it is not hay fever. As already stated, cases occurring during the months of December, January and February, which were formerly supposed to be due to hyperesthetic rhinitis, were found to be due to the pollens found in the air at that time.

The importance of a correct diagnosis in these cases is due not only to the application of the correct treatment,[4] but also from a prophylactic standpoint. Knowing the noxious pollens, the patient may make use of means to have the cause removed, or, when this is impracticable, he may avoid the proximity of the offending plants.

Summary.—(1) Hay fever is the most important and common form of hyperesthetic rhinitis.

(2) Many cases of hyperesthetic rhinitis of unknown origin are really due to atmospheric pollens and are therefore true hay fever.

(3) The irritating effects of dust are often due to the presence of hay fever pollens.

(4) In hay fever, there is both a direct (local) and indirect (constitutional) effect of the pollens.

(5) The recognition of the pollens which cause hay fever is important from both a therapeutic and prophylactic standpoint.

(6) In cases in which an attack of hay fever would be a serious complication, the patient may be protected by the solvent action of water on the atmospheric-pollens.

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(4) "Notes on the Treatment of Hay-fever." W. Scheppegrell, M. D., *Interstate Medical Journal*, May, 1917.

844 Audubon Building.

HISTOPATHOLOGY OF THE INTERNAL EAR IN TYPHOID FEVER, PURPURA HEMORRHAGICA AND EPIDEMIC CEREBROSPINAL MENINGITIS.

Dr. Fumio Tanaka, Okayama, Japan.

I. HISTOPATHOLOGY OF THE INTERNAL EAR IN TYPHOID FEVER.

It often happens in the course of typhoid fever that impairment of hearing develops as a result of inflammation of the tympanum. As McCrae[1] states: "Deafness without any discoverable lesions occurs comparatively frequently." According to Rhese,[2] of all the typhoid cases in his service there was bilateral deafness in 14.9 per cent, without any accompanying complication in the middle ear. Clinical experience, however, allows us to presume, as Knapp,[3] Moos,[4] Bezold[5] and others have suggested, that in the majority of such cases there is some change in the internal ear. It would seem to the writer that the pathological evidence to support this theory is rather insufficient. He was able to find only three reports on this subject in the literature.

Sporleder[6] was the first to report microscopic findings of such changes in the internal ear. He made a post-mortem examination of a patient who had become deaf in consequence of an attack of typhoid fever six years previously, and found that the spiral ganglion, the cochlear nerve and the trunk of the acoustic nerve had disappeared, leaving in their places new formation of connective tissue. Sporleder regarded these changes as due to a chronic neuritis caused by the disease six years before.

Wittmack[7] reports a case in which he found atrophy of the organ of Corti, of the spiral ganglion and of the cochlear nerve. He ascribed these changes to typhoid fever because the patient, who had died of purulent meningitis, had had nerve deafness since the typhoid fever attack thirty years before. Wittmack is of the opinion that nerve deafness in the course of typhoid fever must be regarded as due to inflammation of the acoustic nerve. Manase[8] examined the petrous bone in this case and found new formation of connective tissue in the scala vestibuli and scala tympani and atrophy of the organ of Corti, ligamentum spirale, ganglion spirale, cochlear nerve and the trunk of the acoustic nerve. He concludes that the new formation of connective tissue must have been due to otitis interna which could have been caused by the typhoid fever, but it is not certain whether it was an inflammation of the auditory nerve as in Sporleder's case or not.

We see, therefore, that the changes considered as pathological evidence for otitis interna or acoustic neuritis in typhoid fever are nothing more than the secondary changes which must have followed some primary process. And as regards that primary process we have no conception but Manase's assumption: "*Welche Umstände das sind, müssen weitere Untersuchung lehren, besonders in Fällen die bei Beginn der Erkrankung zur anatomischen Untersuchung gelangen.*"

The writer had the opportunity of making the following study:*

Y. K., male, 30 years old.

Previous History. About five years ago, while in China, the patient suffered from beri-beri. Otherwise he has always been well up to the time of the present trouble.

Present illness. About one month ago the patient had a chill and a rapid rise in temperature. Since then he has felt feverish and general exhaustion. For two weeks motor disturbance has been present in both lower extremities and in the upper extremities for one week. No appetite. About five stools per diem.

Physical examination. The patient is a well nourished and well developed man; skin and visible mucous membranes very pale; considerable dyspnea. Temperature 39° C.; pulse, 120. Facial and hypoglossal nerves seem not to have been affected. There is no change in pupillary reaction. Tongue is dry and has a dry coat on a purple background.

Heart. Area of cardiac dullness somewhat increased towards the right. Soft systolic murmur at apex. Second aortic sound slightly accentuated.

Lungs. Dry rales on auscultation.

Abdomen. Flat; pain in muscles on palpation; spleen palpable.

Extremities. Motor and sensory disturbances in upper and lower extremities.

Diazo reaction, positive.

Widal reaction positive with 1-50 and 1-100 dilutions.

Diagnosis. Typhoid.

Patient died November 14, 1911.

It is to be regretted that there was no chance for hearing tests which would have been interesting and important for this study.

Autopsy was performed in the pathological department of the university the following day and the clinical diagnosis was confirmed. I am very greatly indebted to Prof. Fujinama, chief of the department, who willingly gave me the temporal bones of the patient.

Microscopical examination. The petrous bones were fixed in Müller's fluid for about one month and embedded in celloidin after decalcification in 5 per cent. aqueous solution of nitric acid. Serial sections were prepared parallel to superior and anterior surface of the pyramid. Some of these sections were stained in 1 per cent osmic acid solution for three to five days (modification of Marchi's chrom-asmium method), and some in 1 per cent. thionin. Heidenhain's iron-hematoxylin, Weigert's, Van Gieson and hematoxylin-eosin stains were also used.

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*Abstracted from the record of the Medical Clinic of the Imperial University of Kioto, through the courtesy of Prof. Nakanishi.

The left ear. External auditory meatus and membrana tympani. Not notable.

Middle ear: The cavity is filled with serous exudation containing a small number of lymphocytes and red blood corpuscles. In several lesions in the mucous membrane there is infiltration of lymphocytes with congestion of the neighboring blood vessels. The ossicles and their ligaments as well as the muscles show no changes.

Chorda tympani nerve: No change except slight swelling of the nerve fibers.

Osseous labyrinth: In the modiolus congestion of the blood vessels is noticeable. The scala vestibuli and scala tympani are filled with serous exudation which takes a pale color with every stain.

Membranous labyrinth: The exudation is also present in the ductus cochlearis as well as in the perilymphatic space.

Membrane of Reissner is normal. The organ of Corti maintains its ordinary form comparatively well and the cells are kept as usual except the inner hair cells, each of which is changed to an irregular mass.

Vestibule and semicircular canals: Except for serous exudation in the endo- and perilymphatic spaces no notable change is to be seen.

Cochlear nerve: In general the myelin sheaths are markedly swollen and many of them present reticular formations which seem to be due to something like vacuoles produced in them. In several foci they have disappeared. Segmentation of the nerve fibers is very marked (Fig. 1). In the Marchi preparations there are intensely black stained, small balls and clots joined together in chain form in the myelin sheaths. These clots can be traced through the whole cochlear nerve except the peripheral portion from the base of the modiolus (Fig. 2). The blood vessels among the nerve fasciculi are in a hyperemic condition.

Ganglion spirale: The ganglion cells are in general markedly shrunken and show polygonal, triangular or semilunar forms with eccentrically situated nuclei. The arrangement of Nissl's granules in their protoplasm is very irregular; in some of the cells the granules are to be seen only around the nuclei, while in others they have disappeared entirely.

Vestibular nerve: The changes exhibited in these nerve fibers are about the same as in the cochlear nerve. Numerous Marchi clots in the myelin sheaths are also noticeable. But the segmentation of nerve fibers is less marked than in the former.

Vestibular ganglion: The cells show considerable atrophy and the arrangement of Nissl's granules in them is very irregular, as in the spiral ganglion.

Trunk of the auditory nerve: The histological changes in the nerve fibers are almost the same as in those of the vestibular nerve. Congestion of blood vessels among the nerve fasciculi is noticeable.

Ductus endo- and perilymphaticus: Normal.

Facial nerve: Findings the same as in the vestibular nerve, although the changes here are less marked than in the latter.

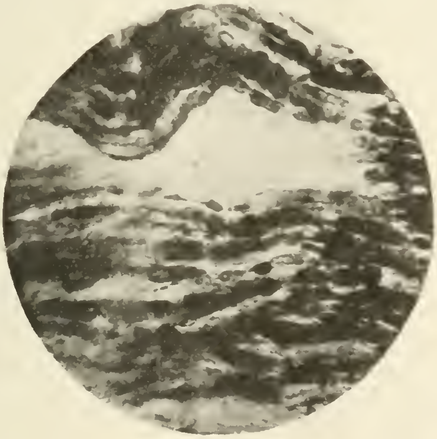

Fig. 1. (Typhoid fever.) Nervous cochleae in the case of typhoid fever. (Heidenhein's Iron—Haematoxylin stain). The fibres are very swollen and the segmentation in them is remarkable. In some fibres the disappearence of the myelin sheaths is to be seen.

The Right Ear. Speaking generally, the histological changes in the right ear are almost the same as in the left ear. Numerous Marchi clots in the myelin sheaths of the auditory nerve and its branches as well as in the facial nerve, are present.

Discussion. The changes to be taken into consideration in the above mentioned findings are the following:

1. Serous exudation in the tympanum and labyrinth.
2. Congestion of the blood vessels in the middle and internal ear.
3. Degeneration of the nerve fibers of the cochlear and vestibular nerves, the trunk of the auditory nerve and the facial nerve.

As already mentioned, Manase, in the case he studied, found connective tissue formation in the labyrinth, from which finding he assumed that there must have existed inflammation of the labyrinth caused by the typhoid fever.

In the case here described the substance resembling nebula which filled the peri- and endolymphatic spaces of the labyrinth may be considered as an artificial product. In the tympanum, where the mucous membrane presented more hyperemia the same substance was present mixed with a few lymphocytes and red blood corpuscles. Such is the finding in a catarrhal inflammation of the middle ear. Moreover, I have seen such an exudation in both labyrinths as well as in both tympani. Sections of a normal labyrinth examined by the same technique as a control, showed nothing of this character.

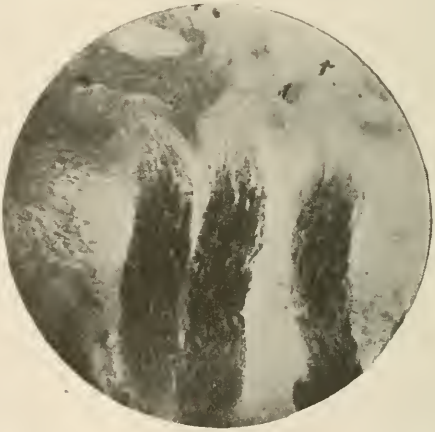

Fig. 2. (Typhoid fever). Nervous cochleae in the case of typhoid fever. (Marchi method.) In the myelin sheaths many black stained clods are to be noticed. A part of the modiolus is presented in the picture.

In regard to the changes in the nerve fibers it might be argued that they may be post-mortem effects, but there is no need to discuss this point because the changes in this case were very striking and far from the changes considered as post-mortem effects. Furthermore, the degeneration of the nerve fibers has been clearly proved by Marchi's method.

These changes in the internal ear are practically the same as Wittmack[9] and Doinikow[10] described as changes occurring in nerve fibers in toxic neuritis and I do not doubt that in this case there has been a neuritis in the acoustic nerve and its branches as well as in the facial nerve, on both sides.

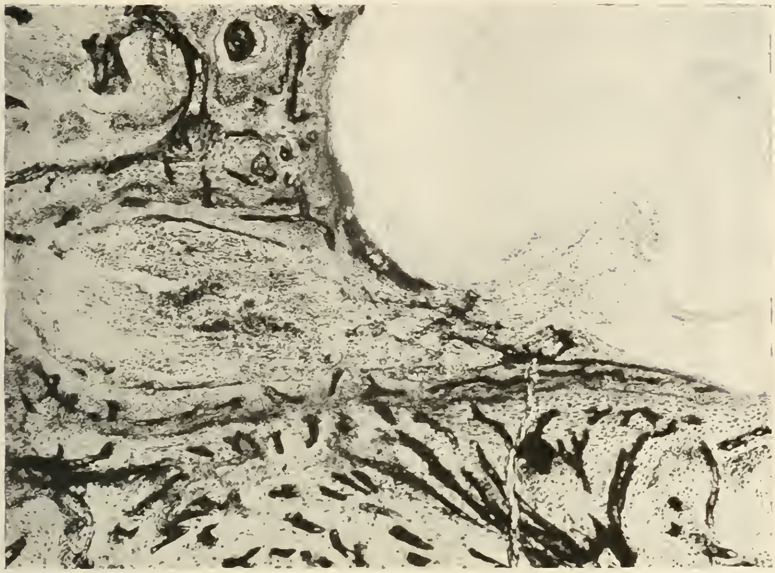

Fig. 3. (Purpura hemorrhagica.) Shows an area in a section of the case of purpura hemorrhagica. (Haematoxylin-Eosin stain.) Crista acustica of posterior semicircular canal, posterior ampullary nerve of the vestibular nerve and a part of the osseous labyrinth are presented. Hemorrhage among the nerve fasciculi and the fibres is to be noticed.

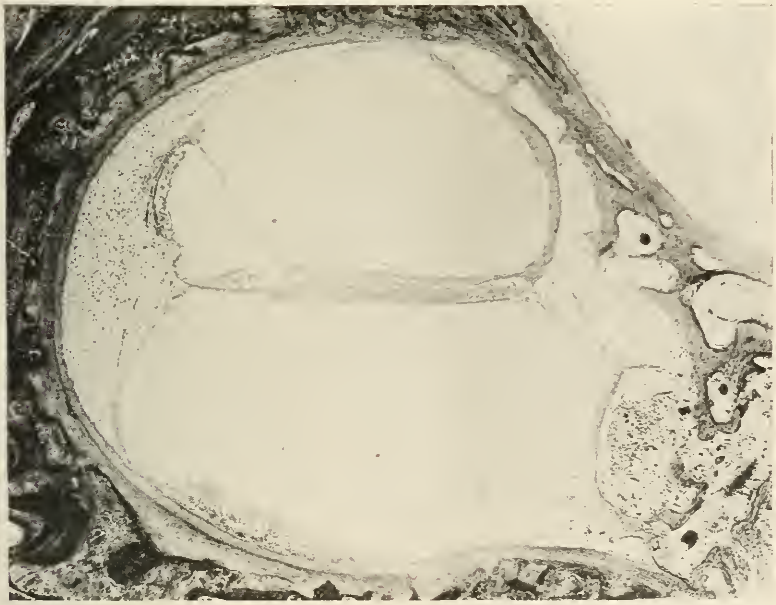

Fig. 4. (Epidemic cerebrospinal meningitis.) Presents basal whorl of the cochlea in a section of the case of epidemic cerebrospinal meningitis. (Haematoxylin-Eosin stain.)˜ Hemorrhages in the scala tympani, modiolus and among the cells of the ganglion spirale.

I have also noticed that the changes are most marked in the cochlear nerve and less severe in the facial nerve. This is easily understood if we consider the slighter power of resistance of the cochlear nerve than that of the vestibular nerve, and as described by Politzer[11] the greater impressionability of the auditory nerve as compared with the other cranial nerves.

Concerning the findings in the ganglion cells I feel that it is very difficult to discuss the arrangement of Nissl's bodies and make a clear differentiation from post-mortem or artificial effects in a section which was treated in so strong a reagent as nitric acid. However, it is possible that the marked atrophy and the disorder of the Nissl bodies might be the result of the degeneration.

Destruction of the inner hair cells of the organ of Corti should have no significance other than post-mortem alteration because these cells undergo post-mortem changes very early as Tomita[12] and Yoshii and Nagel[13] have proved.

It may be asked, therefore, what was the cause of the abovementioned changes?

In the case described the inflammatory process in the internal ear is in an early stage and I believe that no other possible cause can account for the changes, except typhoid fever, of which the patient died after one month's illness.

Conclusions. 1. This is a case in which acute otitis media, otitis interna and neuritis of the trunk of the auditory nerve, the cochlear and vestibular nerves and of the facial nerves have been caused by typhoid fever.

2. This case presents histological evidence that in the course of typhoid fever there may occur otitis interna or neuritis acustica. This was previously assumed from clinical experience and pathological deduction from secondary changes after a lapse of time (Sporleder, Wittmack, Manase).

II. HISTOPATHOLOGY OF THE INTERNAL EAR IN PURPURA HEMORRHAGICA.

In 1900, Sugar[1] reported a case of purpura accompanied by disturbances in the organ of hearing, the clinical symptoms pointing to hemorrhage in the labyrinth. He claimed to be the first to have reported such a case. In fact, we know very little concerning the relation of purpura to the ear structures. The literature contains but few reports on this subject.

Moos[2] described a case of hemorrhagic complication in the tympanum in the course of purpura and Tomka[3] reported a similar instance. Citelli[4] reported a case in which the patient became a deafmute after an attack of purpura and this author urges that purpura be taken into consideration as a cause of deafness. Guettichi[5] described a case in which total deafness developed after purpura hemorrhagica. Stimson's[6] case was similar to Citelli's.

All these reports, however, lack pathological evidence to prove the occurrence of hemorrhage in the internal ear in the course of purpura.

The writer was fortunately able to make an histological examination of the internal ear in the following case of purpura hemorrhagica:*

I. S., male, 17 years old.

Family history. A maternal uncle is said to have died from articular rheumatism.

Previous history. For a considerable time the patient used to have nose-bleed twice or three times a month.

Present illness. About two years ago there appeared a flat, corn-sized spot in the skin of the left chest, and successively in several regions of the body. The color of the spots was first red, then brown and finally faded. While the first crop of spots faded new ones appeared, but after about one month the patient was free from all spots. Six months later there was a recurrence and this attack continued until the day of admission without any serious symptoms accompanying it.

For one week the patient had pain in the extremities, especially in the legs, and complained of headache, fever and general exhaustion.

Physical examination. Well developed and well nourished. Temperature, 37.6°; pulse, 100; synchronous and of moderate tension.

Skin. All over the body except the plantar surfaces and the head, there are many dark red or brown spots which vary in size from a rice to a corn kernel and do not change color on compression. The spots are present also on the buccal and palatal mucous membrane.

Heart. Area of Cardiac dullness normal; the sounds are loud and there are no murmurs.

Lungs. Not notable.

Abdomen. Not notable; liver and spleen not palpable.

Extremities. Pain in knee-joints on movement but they are not swollen or fluctuant.

Admitted to the hospital April 2, 1911. Died, June 1, 1911.

During the patient's stay in the hospital he had moderate fever (37.6°-39.0° C.). On May 3, a new spot appeared in the conjunctiva; since then he had vomiting, tinnitus and impairment of hearing. Hemorrhage in fundus oculi was present also on both sides. No hearing tests were made.

Autopsy was performed the day following death and hemorrhages were seen mainly in the pleura, lungs, endocardium, liver and mucous membrane of the larynx, trachea, bronchi, stomach and intestine, in the dura mater and pia mater.

Microscopical findings in the internal ear. Through the courtesy of Prof. Fujinami I obtained the right petrous bone which I fixed and prepared as described in the preceding case. The same stains were applied except the thionin and Marchi stains.

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*Through the courtesy of Prof. Nakanishi, Imperial University of Kioto Medical Clinic.

Vestibular nerve. At the area just before the termination of the posterior ampullary nerve in the crista acustica of the posterior semicircular canal there is considerable hemorrhage among the nerve fasciculi and nerve fibers (Fig. 3). Some of the red blood corpuscles have kept their ordinary forms but many of them have disintegrated into a granular mass staining dark brown with eosin.

The nerve fibers seem slightly atrophied but the methods employed in the examination show no very noticeable changes.

Ganglion spirale. Among the ganglion cells of the basal whorl an ecchymosis is seen without it having caused any marked disturbance in the neighboring tissue.

Scala tympani. Considerable extravasation of blood is present in the scala tympani of the middle whorl. The red blood cells keep their form comparatively well and take a dark red color by the eosin stain.

Internal auditory meatus. Ecchymoses are present in the dura covering the acoustic nerve.

Facial nerve. The nerve fiber itself presents no abnormality but in the sheath surrounding the nerve many bloody extravasations are to be seen and especially at the area where the facial nerve joins the stapedius muscle this hemorrhage is very marked.

External auditory meatus, membrana tympani and tympanum. No change.

Reissner's membrane. Normal condition.

Organ of Corti. Normal condition.

Discussion. There are to be noted the hemorrhages in the internal ear, especially those in the vestibular nerve, scala tympani and spiral ganglion. We know that hemorrhage in the internal auditory meatus may occur in terminal agony and also in the labyrinth in suffocation and in some infectious diseases. But these can easily be excluded as causes of the hemorrhages in the case outlined. The only other disease to be considered is purpura. Moreover, the finer examination of these hemorrhages discloses the fact that they occurred some time before the death of the patient, except those in the scala tympani and internal auditory meatus. But even the latter may be said with utmost probability to have occurred from the same cause as the numerous hemorrhages in the skin, viscera and brain.

It is to be observed that the findings in the labyrinth and in the vestibular nerve are in accord with the clinical symptoms: impairment of hearing, tinnitus and vomiting which set in about one month before the death of the patient.

Conclusions. The case here reported is a case in which hemorrhages in the internal ear were caused by purpura hemorrhagica.

III. HISTOPATHOLOGY OF THE INTERNALL EAR IN EPIDEMIC CEREBROSPINAL MENINGITIS.

It is a well-known fact that a large number of patients suffering from epidemic cerebrospinal meningitis have lost their hearing in the course of the disease, although the affection of the ears in this disease depends a great deal upon the character of the epidemic. For instance, in his statistical study of sixty-four patients who survived the disease. Moos[1] found thirty-eight cases that had become deaf. According to Smith's[2] statistics about one in every ten patients becomes deaf. The cause of this deafness has been understood to be the disorder in the labyrinth and acoustic nerve.

The pathological changes in the internal ears in cases of epidemic cerebrospinal meningitis have been described in the cases reported by Heller,[3] Lucae.[4] Steinbrügge,[5, 6, 7, 8] Schwabach,[9] Goerke[10] and Doki[11] and in general the changes found in these cases were mainly purulent infiltration in the labyrinth and acoustic nerve and the phenomena resulting from such infiltration. The infection of the labyrinth results from the inflammatory process in the subdural space of the brain spreading into the labyrinth chiefly along the sheath of the acoustic nerve, but sometimes through the ductus perilymphaticus and more rarely through the ductus endolymphaticus. In his seventeen cases Goerke found that the inflammation of the labyrinth took place along the acoustic nerve in eleven cases, through the ductus perilymphaticus in three cases, through both paths in two cases and through the ductus endolymphaticus in one case. Whether or not the infection may occur through the blood stream has not been shown.

In the autumn of 1913 there was an epidemic of cerebrospinal meningitis in Okayama Province, Japan. The total number of cases was 476 with 293 fatalities. No definite etiological organism for this epidemic was discovered but the symptoms were typically those of cerebrospinal meningitis (Katsurada[12]).

I was able to make a histological examination of the ear in one case as follows:

The patient was a woman who died after eight days of the disease. The autopsy was performed on the following day in the pathological department of the Okayama Medical School. The anatomical examination revealed, besides the typical changes in the cerebral and spinal meninges, cell infiltration and hemorrhage in the gray matter of the spinal cord, especially in the anterior horns, and hemorrhages in several of the viscera (Muda[13]).

Through the kindness of Prof. Katsurada I obtained both temporal bones.

Microscopical findings. The technique of examination was almost the same as in the preceding examinations but following Wittmack's[14] suggestion the bones were placed in Müller's fluid for one month after previous fixing in chrom-formol solution, then in Marchi's fluid for twenty days. Decalcification, embedding and stains were the same as in the former examinations.

Left ear. External auditory meatus. Not notable.

Membrana tympani. The inner layer is swollen with moderate cell infiltration; many ecchymoses and congestion of blood vessels are seen.

Tympanum. The cavity is filled with purulent exudation mixed with numerous red corpuscles; in the mucous membrane hyperemia and many hemorrhages present.

Vestibule and semicircular canal. No notable change is to be seen.

Scala vestibuli. Normal.

Scala tympani. Considerable hemorrhage containing many pus corpuscles are seen in the cavity from the basal whorl to the middle whorl; this hemorrhage can be traced to a blood vessel in the spiral ligament (Fig. 4).

Reissner's membrane. Normal.

Organ of Corti. Slight change which cannot be regarded other than as a post-mortem change.

Modiolus. Marked hyperemia and several ecchymoses with infiltration of pus corpuscles around them are noticeable.

Trunk of acoustic nerve. Along the sheath congestion of blood vessels and slight infiltration of pus, but the pus does not reach to the branches of the nerve.

Cochlear nerve and spiral ganglion. No noticeable change in Marchi or other preparations except several ecchymoses among the ganglion cells. Vestibular nerve and its ganglion present no visible change. In the sheath of the facial nerve there is hyperemia and several ecchymoses. The nerve fiber itself shows no change.

Right ear. There is no inflammation and hemorrhage in the tympanum and scala tympani, as present on the left side. With these exceptions the other findings in the right ear are almost the same as in the left ear.

Discussion. The main findings in this case as as follows

1. Hemorrhagic purulent inflammation of the tympanum.
2. Hemorrhages in the scala tympani, spiral ganglion and in the modiolus.
3. Hyperemia of the middle and internal ear.

The changes agree with the findings in the other visceral organs in which many hemorrhages were found. It indicates that the disease has a septic character.

That inflammation of the middle ear may occur frequently in the course of epidemic cerebrospinal meningitis is a well-known fact. Roos[15] is of the opinion that the inflammation follows in the tympanum through the blood vessels. Hessler[16] reported one such case. Levinger[17] points out that in some cases the inflammation in the tympanum may be a primary affection and from the tympanum the infection may spread to the cranial cavities.

In the case here reported the changes in the tympanum showed acute and septic characteristics, as was proved also in the other organs. This inflammation in the tympanum leaves little question as to its cause which was the same as that of the cerebro-spinal meningitis. Whether the inflammation in the middle ear was primary to the brain infection is a very difficult question to solve.

In regard to hemorrhages in the internal ear in the course of cerebrospinal meningitis, Heller[3] and Lucae[4] repored cases in which they found besides pus infiltration in the labyrinth and auditory nerve several ecchymoses in the tissues of the internal ear. From the presence of this ecchymosis Heller doubts whether the inflammation in the labyrinth in his case spread along the auditory nerve into the labyrinth or occurred independently from that in the brain and spinal cord. He inclines to the former possibility in view of the microscopical findings in the auditory nerve.

Moos[18] states that in his case the otitis interna in the course of cerebrospinal meningitis was not of vascular origin. Goerke, as already mentioned, could prove no causative relationship between the labyrinthine inflammation and the blood stream in his seventeen cases.

In the case here reported the admixture of pus corpuscles with the hemorrhages in the scala tympani and the other areas of the internal ear point to infection of vascular origin for the changes in the internal ear have no direct communication with those in the brain and the infiltration of pus around the acoustic nerve does not reach to its branches. Moreover, the changes are the same as in the other organs. It seems probable that the inflammation of the labyrinth would become as severe as the inflammation in the tympanum were the process to continue.

Conclusions. 1. In a case of epidemic cerebrospinal meningitis there was found hemorrhagic purulent inflammation in the middle and in the internal ear.

2. The case has proved that in epidemic cerebrospinal meningitis inflammation of the labyrinth may occur as a result of blood infection.

In closing this report I desire to acknowledge my indebtedness to Dr. H. Watsuji, Professor of Otology, Imperial University, who gave me constant advice in these examinations.

I also wish to thank Dr. E. E. Southard, Director of the Psychopathic Hospital, Boston, Mass., and Mr. H. W. Taylor, who gave me kind advice in regard to the photomicrographs.

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Okayama Medical School.

REPORT OF A CASE OF CYST OF THE LARYNX.

Dr. William B. Chamberlin, Cleveland, Ohio.

Cysts of the larynx receive but passing mention in any of the recent American text books. An excellent discussion of their etiology and pathology is found in Chiari's volume on the larynx. According to this author, "they owe their origin very infrequently to the mucous glands." In addition, they arise from distended blood or lymph vessels, as well as from serous effusions into connective tissue spaces. Mucous cysts develop from the glands through retention, after the closing of their openings as the result of inflammatory, ulcerative or cicatricial processes. Through this retention of the secretion the acini or tubules become distended, their walls become stretched and gradually eroded so that ultimately a round sack develops, which is lined within by at most a cuboidal, or a flattened pavement epithelium. The cyst is covered without by mucous membrane, which is at first red but later becomes pale and translucent as the pressure becomes greater. Almost always one sees upon the surface single or branching blood vessels. These cysts vary greatly in size. They form two per cent to seven per cent of all benign growths." From the few reported cases it would seem that cysts of large size are relatively uncommon.

In reviewing the literature one cannot but be impressed with the difficulties which confronted the operators in the earlier cases, especially in children, and the boon to patient as well as operator, which suspension laryngoscopy affords. A most interesting case of cyst of the larynx was reported by Greene in 1907. In his article the author states that he operated in Rowe's position but does not state definitely how he secured a satisfactory view, nor does he state just where the cyst was located, though he mentions later a thickening of the right pharyngo-epiglottic fold.

Greene, quoting from Moure's 117 collected cases, gives fifty as located on the epiglottis, forty-five on the vocal cords, eight on the ventricles, four on the arytenoids, three on the ary-epiglottic fold, one on the cartilage of Santorini, two on the ventricular bands, and four locations not given. Of all reported tumors of the epiglottis up to 1905, Purseigle found that forty per cent were cysts.

The case in question was referred to me on October 25, 1915, by Dr. R. D. Reynolds of Green Spring, Ohio. The history was as follows: Almost from birth the parents had noticed that the child had a peculiar cry. Soon after there was noticed a stridor on inspiration only. This had always been present. During the past six months it had become markedly worse. There was no history of dyspnea or cyanosis.

Examination at the office showed a normal, well developed child. The tonsils were not enlarged and there were no evidences of adenoids. Examination with the mirror showed an overhanging epiglottis, which rendered a view of the larynx impossible. The patient was accordingly referred to Lakeside Hospital for examination under anesthesia by means of suspension laryngoscopy. After primary gas, succeeded by light ether anesthesia, the child was placed in suspension and the region of the larynx brought easily into view. A large tumor mass, smooth-walled, of rounded, even contour, and with small blood vessels upon its surface, was immediately seen. This mass was roughly two centimeters in diameter and occupied the entire right side of the larynx, rendering a view of the right true and false cords, as well as the interior of the larynx, impossible.

At the summit of the left ary-epiglottic fold was a hypertrophic fold of mucous membrane flapping back and forth in the air-stream and giving rise to the stertor. This fold was grasped by the Killian baby forceps and easily resected with the long, straight Lynch knife. After its removal the stertor immediately ceased. Attention was now again turned to the tumor mass on the right. Examination with the probe showed it to be sessile or semi-pedunculated and exceedingly firm to the touch—so firm in fact that a probable diagnosis of enchondroma was made. In order to definitely confirm this diagnosis, before deciding upon the external operation which an enchondroma would probably have necessitated, the long knife was thrust firmly into the tumor mass. There followed an immediate gush of a brownish, vissid, almost gelatinous fluid one to two drachms in amount. The tumor had disappeared. Careful examination even failed to reveal its walls or the location of the stab wound. It seemed most probable, however, that the tumor had been situated on the right ary-epiglottic fold. An excellent and unobstructed view of the entire larynx and several rings of the trachea was at once possible. The child was returned to the ward in excellent condition and left the hospital at the end of the third day.

On account of the inability to resect a portion of the cyst wall, some anxiety was felt in regard to the possibility of a recurrence. A letter from the mother on March 7, 1916, in reply to my inquiry as to the child's condition, is as follows: "There is not a sign of trouble in his throat. He is feeling fine and has been all winter. He has not had a cold, whereas before he had a cold continuously. He plays out of doors all day long. If we ever notice anything wrong we will bring him in to see you at once."

Osborn Building.

A CASE OF EPIDURAL ABSCESS WITH PARALYTIC SYMPTOMS SIMULATING BRAIN ABSCESS AND MENINGITIS. OPERATION AND RECOVERY.

Major J. C. Calhoun, London, England.

P. W., 20 years of age, admitted into the hospital April 27, 1916.

Complaint. Discharging ear (right) of many years' duration but with no particular symptoms till recently, since when he has complained of severe headache and vertigo.

Examination. Left ear: Normal. *Right ear:* Canal almost completely occluded by a large polyp with profuse discharge escaping with difficulty and under pressure; slight tenderness over mastoid.

The polyp was removed by snare to facilitate drainage and patient put on routine treatment. The discharge continued profuse each day.

May 17. Complained of feeling very ill with severe headache; tongue heavily coated; mastoid moderately tender.

May 18, A. M. Headache less severe but vertigo marked; mastoid less tender; discharge less; physiological nystagmus on extreme abduction to left; no stiffness of neck nor retraction of head; no Kernig sign. Examination of chest and abdomen, negative; examination of eye grounds, negative.

May 18, 7:30 P. M. Eyes turned to right, could only abduct to left with difficulty; pupils dilated; neck stiff; suggestion of Kernig;

pulse slow; patient much more comatose. Cerebro-spinal fluid withdrawn under pressure; turbid, no actual organism found.

May 19. Very comatose, head and eyes turned to right, unable to move eyes to left beyond mid-line; imperfect closure of left eyelids; left pupil dilated more than right with sluggish reaction to right; pulse slow, respiration slow and regular. Knee jerks absent, ankle jerks absent; dorsi-flexion of left great toe; no clonus; neck muscles stiff, slight if any retraction. Kernig positive on both sides; abdominal reflexes absent; no rash. *Fundus examination:* Right, normal; left, slight swelling of optic disc and distension of ophthalmic veins.

May 21. Complete paralysis of left arm, slight facial paralysis (corner of mouth drawn to right side and no wrinkling of skin on forehead). No aphasia. A diagnosis was made of temporo-sphenoidal abscess.

May 21. Operation. Radical mastoid done with complete exposure of dura of mid-brain and sinus. Free escape of foul, green pus, pulsating under pressure which came more or less indefinitely from the epidural region over tegmen of antrum and middle ear. The bone comprising the roof of the antrum and middle ear was very much necrosed. Sinus was covered with granulation but appeared healthy. Dura edematous and generally discolored. An exploratory incision into the substance of the brain in the temporo-sphenoidal region did not locate any abscess and as free pus had already been encountered further explorations into brain tissue were not made. Wound packed with iodoform gauze and left open.

May 22. General improvement. Temperature normal; partial recovery of movement of left arm, although no grip or finger movements. Normal plantar reflexes and knee jerks on both sides. Divergence of pupils not so marked.

May 23. Patient rational but cloudy; neck still slightly stiff; facial paralysis markedly improved; able to abduct eyes to left; slight movement of fingers with weak grip.

May 24 and 25. General improvement.

May 27. Grip markedly stronger. General improvement in every way except a continued slow pulse ranging between 48 and 56.

From this date until the present no untoward symptom has arisen.

This case appears interesting because although the pus was epidural and covered a considerable area, the symptoms were so definitely focal of an abscess. It also emphasizes the importance of any acute lighting up of a chronic aural suppuration.

Canadian Expeditionary Force.

ACUTE OTITIS MEDIA OF DIPHTHERITIC ORIGIN.*

Dr. Wm. C. Bane, Denver, Colorado.

The literature on diphtheria of the ear is not voluminous, and most of the articles on the subject were written within the past twenty-five years. In 1889, Billington made mention of diphtheria of the ear, and that the exciting organism was undiscovered. In 1905, Welch and Schamberg merely mentioned that the disease is due to extension of the exudate from the pharyngeal vault. The late Dr. Ballenger, in his book, stated, "that infection of the external auditory meatus is seen in rare instances in which there is diphtheritic otitis media with extension through the tympanic membrane;" and also that "otitis media as a complication of diphtheria occurs in only four to six per cent of the cases." Borden finds the percentage much lower than this. Barnhill and Wales divide otitis media caused by the Klebs-Loeffler bacillus into three classes, namely: (1) Primary diphtheritic inflammation of the middle ear. This is very rare. (2) Diphtheritic otitis media by extension from the naso-pharynx. There are a few cases of this type. (3) The most common form is the secondary middle ear infection, which accompanies diphtheria of the throat. Lewin states that acute otitis media often accompanies genuine throat diphtheria. Phillips states that primary diphtheria of the ear is very rare, but that otitis media purulenta acuta occurs in ten per cent of all cases (Duel), and that it shows a marked tendency to become chronic.

I have reveiwed the literature on the subject rather carefully, and the above references are typical, I believe, of most of the articles referring to diphtheria of the ear. They are meager, and reference is usually made to otitis media accompanying throat diphtheria, rather than to real infection of the ear with the Klebs-Loeffler bacillus.

Symptoms and Course: Phillips also states that the disease usually comes on at the height of the naso-pharyngeal process, and the infective bacteria enter the tympanic cavity through the Eustachian tube. Diphtheria bacilli, once in the ear, are likely to remain there for a long time, but lose much of their virulence after the subsidence of the acute symptoms.

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*Read before the American Academy of Opthalmology and Oto-laryngology at the twenty-first annual meeting, Memphis, Tenn., December 11-13, 1916.

The pain in the ear is severe, and persists for several days after drainage is established. Rupture of the drum-head is apt to occur early in the inflammation. The deposit of the diphtheritic membrane appears on the drum and on the auditory canal where the surface has been deprived of its protective epithelium.

The membranous exudate has the characteristic dirty white appearance and adheres firmly to the underlying tissues. The lymphatic glands back of the ear and in the cervical region become infiltrated and tender. The discharge from the ear is rather scanty for the first few days, increasing as the membrane exfoliates. The mastoid and adjacent areas are often congested and painful.

Prognosis: The tendency is for the disease to become chronic for the perforation in the drum-head to persist, and for granulations to appear in the opening. Impairment of the hearing is marked, and improvement usually occurs with the subsidence of the inflammation, although permanent damage may result.

Treatment: This is constitutional and local. Antitoxin is imperative in the early stages and is to be repeated according to indications. Locally, early free drainage is indicated, and the ear should be cleansed with hot boric or salt solution. The irrigation of the ear, nose, and pharynx with a one-fourth of one per cent solution of formaldehyde several times daily will aid in bringing about a destruction of the diphtheria bacilli. This latter treatment was advocated by H. R. Miller, of New York, in 1914, and has proven very efficient in several cases.

Case report: The following case I believe to be one of the few cases of true diphtheria of the ear. Dr. W. C. Mitchell, bacteriologist for the city of Denver for many years, can recall seeing but one case of diphtheria of the ear other than this one.

W. A. P., aged 72 years, developed acute inflammation of the right ear August 16, 1916. The following day the drum-head ruptured and he came under my care on that day. There was a free serous discharge. To make sure of ample drainage, I incised the drum under local anesthesia. On the day following the incision, the discharge was not free, the patient was suffering with considerable pain, and upon examination I could not make the line of my incision, due to a grayish white deposit on the lower half of the drumhead and in the angle between the drumhead and the floor of the canal. I reinserted the knife, and learned by the sensation of touch that the opening was free.

The patient was feeling badly, and suffering with pain in the back of the ear. He was given 10 grains of aspirin every four hours. On the following day there was a little improvement in the ear but no change in the appearance of the drumhead or canal, and only a slight discharge. There was some diminution of the pain.

The exudate looked like the diphtheritic membrane, so a culture was taken which, on the following morning was reported positive. The patient was then sent to Steel Hospital for contagious diseases, given antitoxin, and placed under the care of Dr. Lingenfelter. Cultures were taken from the nose and throat, and these cultures proved to be positive, although there was nothing in the nose or throat suggestive of diphtheria. Upon entering the hospital the patient's temperature was subnormal, pulse 88, respirations 20. The next day the temperature was 100.4°, and the following day 99.6°, due no doubt to the reaction from the antitoxin. After several days of a subnormal temperature, the records were omitted. The right ear continued to discharge moderately, and the patient improved in general health for about two months, during which time the cultures remained positive. I was then called in on account of a severe pain in the left ear, accompanied by some tenderness of the mastoid and darting pains throughout the left side of the head. I incised the drumhead of this ear, and it then began a course similar to that of the right ear except for the absence of any membrane. The cultures remained positive. I ordered irrigation of the nose, throat, and ears several times daily with a one-fourth of one per cent solution of formaldehyde. Within four days the cultures were reported negative, and the patient was then dismissed from the hospital.

Since that time I have treated him frequently at the office. The left ear discharges very little, and what moisture does collect there I believe comes from the throat through the small perforation in the drumhead. The right ear has not done so well. The perforation remains about 2 by 4 mm. in size, with granulations showing through it, and the discharge, now due to mixed infection, is at times profuse. Various methods of treatment have been used in an effort to dry up the discharge, but without much benefit. The high frequency current seemed to make it worse. Chromic acid applied to the granulations was of some benefit.

I would not care to operate in this case, on the account of the patient's age and his weakened condition. He also has a chronic diseased condition of the left antrum of Highmore which is being treated by irrigation. The duration of the otitis media has been prolonged beyond my expectation. However, it has been in keeping with the prognosis of these cases as given by those who have had experience with them.

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530 Metropolitan Building.

CHANCRE OF THE PHARYNGEAL TONSIL.

Dr. Henry C. Haden, Galveston, Texas.

Mrs. X., 25 years old, was referred to me on April 15, 1912, by her family physician for examination of the eyes. She had had headache continuously for two weeks. The pain was not localized to any one place but occurred in different parts of the head. A thorough physical examination, including urinalysis, had been made but nothing could be found to account for the headache.

Her previous history presented no unusual occurrences. Her general health had been good, she was the mother of three healthy children and had had no miscarriages. She had worn glasses off and on since childhood. The woman was in such severe pain that the examination of the eyes was conducted with difficulty. The vision and accommodation of each eye was normal, there was no muscle imbalance and the fundus showed no gross lesion. There was a small refractive error, a half diopter of hypermetropia which was corrected by the glasses she was using.

I advised her that I did not believe that her headache came from her eyes and questioned her in regard to her nose. She stated that she could breathe well through the nose, had no discharge of mucus or pus from the nose or throat and had never had any trouble with the upper air passages. As a last resort I requested permission to examine the nose and throat. The nasal fossa anteriorly presented no unusual appearances nor did the mouth or oro-pharynx show any abnormal change. The posterior rhinoscopic examination with the mirror revealed the pharyngeal tonsil which was swollen, bright red and with an apparent ulceration of its surface. I therefore made a diagnosis of acute inflammation of the pharyngeal tonsil and believed it to be the cause of her headache. I made an application to the vault of the pharynx of argyrol and prescribed a solution of

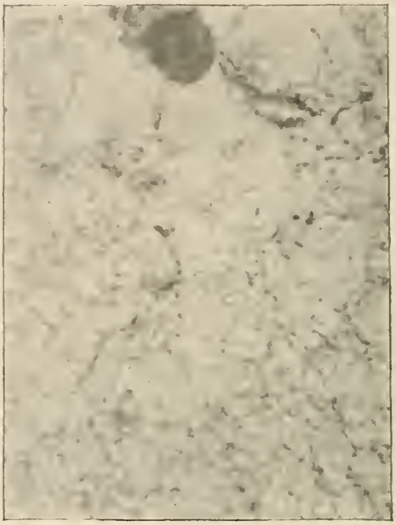
Fig. 1.

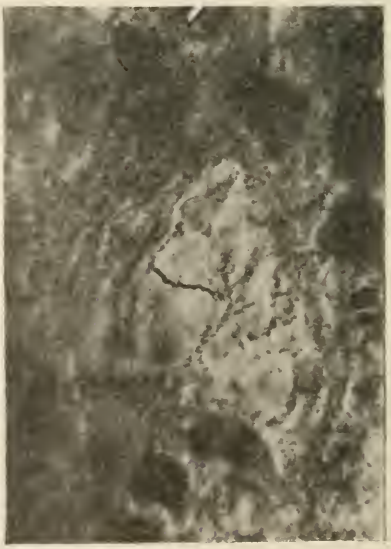
Fig. 2.

adrenalin chlorid to be used as a nasal spray. The next day the headache was so severe that she was unable to leave her bed. She had taken practically no nourishment for some days and was very weak. There was no elevation of temperature. It was necessary to keep her under the influence of morphia to control the pain. The naso-pharyngeal appearances were the same as the day before. On

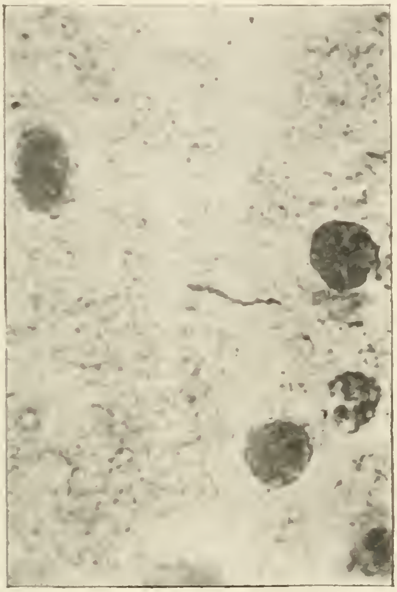

Fig. 3.

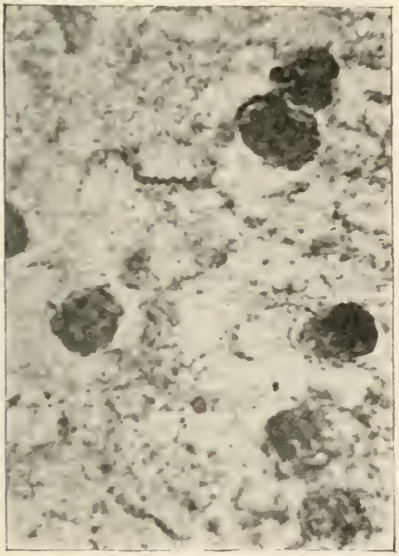

Fig. 4.

the third day the conditions were about the same but the patient was so weak that I thought it unreasonable to disturb her with a postnasal examination. As I was about to leave the room her husband stated that his wife had expectorated something that day and he had saved it to show me. It proved to be a section of the pharyngeal tonsil five-eighths of an inch long by one-fourth of an inch wide and it presented the appearance of having been cut off with a very sharp curette, the separated surface being perfectly smooth. It was not red but was the color of grape pulp or polyp. I immediately took the tissue to Dr. J. J. Terrill, who made a microscopic examination with a dark ground slide and found numerous living spirochetae pallida. I notified the family physician and he made a physicial examination and found a typical secondary rash beginning to make its appearance on the body. Salvarsan was administered the next day and the headache disappeared. Mercurial inunctions were then used and in a few days she was feeling quite well.

At no time was there glandular enlargement, there were no mucous patches nor any other symptoms of syphilis until the secondary rash appeared. The rash did not develop until the headache had existed for three weeks and it is to be presumed and quite possible that the inflammation of the pharyngeal tonsil existed for a week or more previously. So with the exclusion of any other demonstrable lesion I think that one is justified in thinking that the primary lesion was in this tonsil. Both the husband and wife denied ever having had syphilis.

203 Trust Bldg.

SARCOMA OF THE SOFT PALATE.

Dr. B. G. Voorhees, Elmira, N. Y.

Patient, F. P., a girl 10 years of age.

Family history. Father, mother and one brother living and well. Grandmother on the father's side and three aunts on the mother's side died of cancer.

Personal history. Diseases of childhood.

Present condition. The patient was operated on by the family physician on March 29, 1916, for adenoids. She was brought to me on June 12, 1916. I later communicated with the family physician in regard to the case and he reported that at the time he operated there was a small growth on the soft palate. About May 1, the mother noticed that the mass in the throat was growing rapidly.

Symptoms. Dysphagia, anorexia, anosmia, dyspnea, mouth-breathing, marked anemia, asthenia, marked loss of weight, slight rise in temperature; no pain, no chills.

Examination showed an enlarged gland on the outside of the sterno-mastoid muscle freely movable along the course of the sterno-mastoid as well as antero-posteriorly. The growth was about the size of an English walnut, hard and somewhat irregular in shape and had first appeared about May 1. Along the sterno-mastoid muscle as well as in the posterior triangle of the neck there were groups of enlarged glands.

Nose. The postnasal space was entirely shut off, no air being able to pass through. The nasal fossa were filled with a thick, stringy mucous which had to be removed with a cotton applicator.

Mouth and throat. There was a mass about the size of a hen's egg, which had its origin in the soft palate, extending so far down into the throat that it was difficulty that the lower part of the soft palate could be seen even when the tongue was depressed. This mass was tender to touch.

Chest. Very much emaciated; no enlarged glands in the upper part of the chest or axilla.

Liver. Extended two fingers' breadth below the costal margin and was regular. Spleen not palpable.

X-ray report was that the mass was an abscess. Upon this report it was opened by a nose and throat specialist about ten days before I saw the patient. On June 12, I made an exploratory incision and introduced a curved hemostat upward, laterally and then downward, but no pus was obtained. Bleeding was free. There was a soft consistency when the hemostat was introduced. It had the feeling of entering a honey-comb.

The diagnosis at operation was sarcoma and I gave a poor prognosis.

The patient died on July 18, 1916. I saw her about one week before her death and all the symptoms and signs were considerably aggravated.

A specimen taken from the throat on the day of her death was reported by the laboratory as a spindle cell sarcoma.

408 N. Main Street.

AN UNESTABLISHED INCISION FOR THE RESECTION OF THE NASAL SEPTUM OR AN ALL-SKIN INCISION.*

DR. C. E. PURCELL, Paducah, Ky.

I appreciate the honor your secretary has conferred upon me by the invitation to read a paper on the all-skin incision for the resection of the nasal septum, and I feel that I am assuming a great responsibility in accepting it, because of the technical perfection of the septum operation, both by American and European surgeons. Your society would not be interested in a discussion of the merits of ways of performing the submucous operation by American surgeons over German rhinologists. Neither would you be interested in a review of the classical operation nor the classifying of kinds of deviations, but I believe all of you will welcome any suggestion that will lessen or eliminate entirely the complications following resections made by any of the mucous membrane incisions.

In this short paper, I shall endeavor to point out the difference between mucous membrane incisions and the all-skin incision. I am familiar with the complications that may follow submucous resections, because I believe I have experienced practically all of them. Some operators seem to underestimate the difficulties of complete septum surgery, and many minimize the complications. With the advent of the submucous operation as developed by Freer and Killian—which had as its main objects the eradication of all obstruction, or rather restoration of nasal breathing—it might have been thought that a new era would have opened, as it did in the treatment of appendicitis by surgery. This has not been the case, and there are nasal surgeons treating nasal stenosis in the same antique way, by sprays, cautery, operations on the turbinates, and worst of all, by incomplete and ineffectual septal surgery.

I propose to discuss the various incisions from the standpoint of clinical results. The objections to the Hajek incision are that it does not give access to the deeper parts, especially to the bony parts, and being in the mucous membrane, on or near the free border of the septum, is followed by a prolonged scabbing. The objections to the Killian are the dangers of a permanent perforation when the cartilage is cut through, limited room for instrumentation, which leads to incomplete work, and a tendency, I might add a certainty, to scab formation. The Killian incision seems the most popular, and I am sure, the easiest. The Freer incision is the best planned and has the merit of being developed on sound surgical principles—free access. While this gives ample operative interference, yet in my experience, it is followed by extensive and prolonged scab formation. The genius and cleverness of Freer are evident in all his work and writings, but he is open to conviction. The possibility of dryness and scab forming following his incision has prompted him to make changes from the original incisions. The last operation I saw him do, he placed the vertical cut far back on the septum—near the middle turbinate. In St. Louis, in 1910, before the Section on Laryngology and Otology, I advocated, and at that time practiced in order to prevent scabbing, placing the vertical cut far back on the septum, but the horizontal cut was made in the muco-cutaneous structure. Freer and I had changed the vertical cut unknown to each other, but I had changed the horizontal cut nearer the skin in the free border. I felt I had the drawbacks of the operation sewed up in a sack. How quickly I was disillusioned! Wherever I cut the mucous membrance, scabbing and disagreeable feelings always followed. While I got perfect breathing, because I did not stop till I completely removed all of the obstruction, however far back it went, I was disappointed. The patients invariably complained of some disagreeable sensation, either dryness, scabbing or something else. They get the habit either of forcibly blowing out these crusts or removing them by picking with the finger or a toothpick. Personally, I do not know the discomforts of nasal stenosis, but I feel quite positive I should prefer to have the stenosis remain, rather than to have regrets from a septum operation. It strikes me that the scabbing would be just as annoying, or worse, than the stopping up.

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*Read before the American Laryngological, Rhinological and Otological Society, Southern Section, Memphis, Tenn., March 24, 1917.

As I have for a long time contended, I believe the initial incision is the key to a successful submucous operation. For I believe the patient's comfort and satisfaction after the operation depend upon the character and kind of initial incision.

It takes but a few words to describe the all-skin incision as I now place it. Beginning on the floor of the nose opposite the attachment of the inferior turbinate, the incision is carried forward to the tip of the nose, being sure all the while that the incision is in the cutaneous septum, and not in mucous membrane. In extreme anterior deflections, I have begun the incision near the junction of the inferior turbinate on the lateral wall. However, there is no crusting when the incision is started in the middle of the floor, provided that you cut entirely within skin tissue. I use this method in all deflections, however deep in the nose they are located, when it is decided best to do the submucous resection. This may be thought unnecessary surgery, but my results justify me in this method of approaching the obstruction, and too, results justify the extra labor and time taken. As is well known, the dissection is much harder in this region than in mucous membrane, because of the fibrous nature of the tissues, and the tenacity with which they cling in this region. Too, there is more bleeding than in the purely mucous membrance cut. The thick skin covering the foremost, lower part of the septum, does not favor the penetration of cocain, so that little anesthesia is obtained by applying the drug to the surface. I have employed subcutaneous injections of a solution of cocain here, but of late have given them up, for they cause as much pain as the cut itself. It will soon be three years—to be exact, in August—since I began the use of the all-skin incision. In not a single case has there been a complaint of even dryness. The results have been so ideal that I am very enthusiastic and the submucous operation has been robbed of the terrors of scab forming. This incision does not and cannot deserve the name of buttonhole cut and, moreover, is sufficiently ample to carry the resection far back into the bony septum, even where the crista and vomer require extirpation along the nasal floor.

In order to be certain that I have not deceived myself in my enthusiasm over results of the cut thus placed, I have had my confrere, Dr. C. H. Johnson of our city, see a number of cases and he commented that it was practically impossible to find the line of incision. He also noted the freedom of complication of my cases.

I am herewith quoting a letter from him, which states in a few words all I claim for the all-skin incision:

> Dr. C. E. Purcell, Paducah, Ky., Dear Dr.:
>
> I wish to acknowledge a debt I have owed you for some time. You recall, don't you, showing me your latest incision in the submucous operation? It appealed to me at the time, and after using it, my first impression has changed to conviction. I now use it in every case and the end results are all that can be desired—no complaint from patients of any kind so far. The line of incision heals without the aid of sutures, and, best of all, no crusts or scabs form.
>
> Yours truly, C. H. JOHNSON.

Fraternity Building.

STAMMERING—A RESPONSIBILITY.

Mr. Ernest Tompkins, Pasadena, Calif.

Let us put aside for a moment stammering, the disorder, and consider stammering, the responsibility. In order to do that we must review the field briefly.

First, let us consider the knowledge of stammering. The beginning of knowledge is accurate observation. Is it possible that in all the time from the beginning of speech until now we have made no accurate observations of this leading defect of a most important faculty? It is impossible. From the very nature of the circumstances we must have a wonderful fund of accurate observation on which to base our discussions.

Second, let us consider the general conditions. With an immense standing army of stammerers in every civilized country; with accretions to these armies at least equal to their losses; with the multiplication of activities in the interest of the stammerer—clinics, institutions, discussions; with stinging criticisms and pitiful appeals—what have we? Monumental confusion, and practically no benefit.

Third, let us consider the effect, especially in regard to the medical profession. With the responsibility of human suffering on one side, and the intricacies of the human organism on the other side, who has greater need of a logical mind than the physician? Who meets more problems in a day—problems as difficult of solution as they are wearing on the nerves? Who has more general problems thrust upon him with impelling urgency—carcinoma, poliomyelitis, and all the rest? Shall he sacrifice the credit he has won for the solution of many such problems, and the credit he expects for the solution of the others, by illogical work in this side field, which, though large in the aggregate, is comparatively insignificant. To do so would be to confess lack of logic. It would be bad buisness in every sense of the word. Let us "about face" and clean up this field which we have no excuse for leaving unclean.

How shall we go about it? Simply collect the verified facts and connect them by logical reasoning. What could be easier? Why have we not done so before? Because someone jumped at an unwarranted conclusion, someone had an idea to ventilate, someone had a mistaken practice to defend. We must stop that. We must accept the facts and reject the fiction regardless of source or authority. We must question any idea—chiefly our own. We must take our ground so securely that we can defend it. But in order to take our ground we must first clear it. We must eliminate the mistaken ideas, not only to get an audience, but to show that there is need for a new idea. The right to preference of the most satisfactory theory is woefully infringed in the discussions of stammering.

Since this discussion is not to present any particular view, but to present the broad question of the responsibility entailed by stammering and the means of making every discussion of the subject discharge that responsibility, let us take one of the most accepted views of stammering and consider it as it should be considered; take the dextro-sinistralis causation theory. In order to be specific we cannot do better than to follow the arguments of Scripture, Glogau and DeBra, entitled "Left-Handedness as an Etiological Factor in Speech Defects," printed in The Laryngoscope, Mar., 1917, Vol. XXVII, No. 3, which show thoroughness of preparation and carefulness of conclusion rarely found in discussions of stammering.

Mutual understanding of the words we use is necessary for an intelligent exchange of ideas. In the English language, stammering is spasmodic abortive speech; and stuttering is needless repetition. Stuttering may occur as an expression of stammering; but stuttering, the disorder, is non-spasmodic repetition, a habit, generally of childhood, which leads to stammering. Much of the confusion now prevailing is due to the recent use, with the German meanings of the words "stottern" and "stammeln" spelled stuttering and stammering; about as inexcusable an infraction of logic and language as could be devised.

Specific conclusions cannot be reached by general terms. We must eliminate the words "speech defects" when we are discussing any one defect, for they are dissimilar.

Aphasia is loss of speech. It is not spasmodic; it is so generally traceable to a cerebral lesion, that it is alway attributed to an organic disturbance in the brain; it is characterized by slow changes; it is frequent in advanced age.

Stammering is a convulsive abortive effort to say a word that is known—not the loss of the word, as in aphasia. The most diligent search has shown no lesion, and no alleged structural defect has ever been demonstrated; its changes are instantaneous; it originates almost exclusively in childhood.

Lisping is a defect of pronunciation known to be due to such obvious causes as carelessness, defective teaching, defective hearing, and structural defects of the peripheral vocal organs; and there seems to be little if any justification for a search for defects in the central organs; certainly none has ever been found.

Here we have three disorders, each distinct from the other in the great majority of its characteristics, and yet we put them together under the name "speech defects," reach conclusions on some characteristic of any one and apply those conclusions to either of the others. How can such procedure be justified? And could we expect anything but confusion in the conclusions?

Now that we have some principles with which to begin, let us make a start in the discussion. The first thing to do is to agree where we can agree, in order to establish a basis for reconciliation of our disagreements. It is safe to say that there will be general acceptance of this statement from the article in question:

"The localization of the speech centers, then, seems to be well established; their situation in the cerebral hemisphere corresponding to the most developed side of the body seems to be the rare exception; and the proximity of the speech center to the area of motor control of the arm, together with cases where disorders have appeared in these functions simultaneously, lends itself, on the anatomical side, to the hypothesis that there is an intimate connection between the localized areas for speech and the highly refined motor co-ordination of the right arm."

However, the connection that has so far been demonstrated seems to be that where the motor center of the dextrous hand is, near there will be found the speech motor center; and that an organic disturbance sufficiently extensive to involve both centers manifests itself in disabilities of the corresponding peripheral organs. Note, however, that these are disturbances of both centers transmitted outward; and that conclusive evidence is lacking that a narrowly localized disturbance of one center would be transmitted to the other center and then outward.

Now we come to the line of argument:

" . . . a consideration, first, of the anatomical background of the speech mechanism, and then of the neural representation of the fine adjustments of the right fore-arm will, we think, show a relatedness of kind and intimacy of association which makes easy of acceptance the fact we have observed, that a forced disturbance in one of the functions is apt to make itself evident in the other."

The reasoning and the observed fact ought each to stand on its merits. Let us take the observed fact in the language of the observers.

"The evidence that training the right hand of the left-handed child produces a speech defect must be more or less inconclusive for there will always be an abundance of negative cases. But the fact is before us that many times the speech defect appears simultaneously with the correction of the left hand at a time when the child's speech has become well established, and there is some evidence to show that the defect disappears with the return to use of the left hand." In connection with the last statement, the authors themselves say, " . . . we have not found that where a return to the use of the left hand occurred that the difficulty disappeared." These contentions are sound. The period of acquisition of stammering is generally stated to be from 3 to 12 years, and left-handedness is corrected within that period; so coincidence of appearance of stammering and correction of left-handedness is unavoidable. Similarly, the outgrowth of stammering, although frequently disputed, is perfectly demonstrable; and reversion to left-handedness is frequent; so both would necessarily occur at times in conjunction. It is obviously inadmissible to use this coincidence as an argument that one event causes the other; although it would be admissible to show that coincidence will not account for all of the simultaneous occurrences of the two events. No such showing seems to have been made.

In this connection, we have the statistics on the subject; and the article in question might have strengthened its contention that dextro-sinistrality causes stammering by quoting the statistics of P. B. Ballard, said by Lewis M. Terman to establish the point "beyond controversy." But on the contrary, we have the findings of J. E. Wallace Wallin, of the Psycho-Educational Clinic of the St. Louis Board of Education, deduced from "A Census of Speech Defectives Among 89,057 Public-School Pupils," among which findings are, "The above figures show that the vast majority of our left-handed pupils who had been taught to write with the right hand had not developed any speech defects." Also, "But even thus, the data do not prove that the 9.5 per cent of dextro-sinistral stutterers developed stuttering because they had been taught to write with the right hand. As a matter of fact many of them stuttered before they had been taught to write at all." It would seem from these conclusions that any fair-minded person must decide that the observed facts fail to show that dextro-sinistrality causes stammering. Moreover, there has never been a dearth of known causes for stammering. Dr. Makuen demonstrated this in his report on 1,000 cases of stammering in which he listed so many known causes as to exclude even inheritance (*Volta Review*, July, 1915). So the dextro-sinistrality theory had not even a cause for existence. If some of the known causes could have been proved fallacious, then we would have been warranted in looking for a cause to fill the gap; but not otherwise.

Now let us consider the reasoning in favor of the theory. We had the admitted proposition that a pathological involvement of two proximate motor centers indicated itself in disabilities of the peripheral organs of the two respective centers. That is, a common central involvement radiated manifestations through two separate neural paths. From that—and without anything to bridge the immense intervening gap—the argument proceeds on the assumption that interference with the ability of one peripheral member, the hand, will transmit an effect inward to its motor center, from that to the other center and then outward to the peripheral organs of the other, the articulatory apparatus. If this was true, the effect on the brain would be pathological, and the effect on the speech would be aphasia—the only speech defect under consideration known to result from a cerebral lesion. Let us see if this is so. What do we do when we correct left-handedness? We educate the right hand. We do not interfere with the ability of the left hand: we adopt a laissez-faire policy with it; but even at that, we know that it goes on adding to its education surreptitiously. So the effect of discouraging left-handedness is merely to lessen the rate of the education of the left hand, and positively not to deprive it of its ability, as is claimed. But suppose we did deprive it of its ability? Go so far as to cut it off. Plenty of people have a hand cut off. Does a lesion of the manual motor center occur? Does a speech defect—especially aphasia—occur? If so, why have not the advocates of the dextro-sinistrality causation theory of stammering told us of it? And why is there never a mention of aphasia in these statistics brought forward in support of the theory? The only speech defect that we might expect would be caused by dextro-sinistrality is the one that is not even mentioned in the statistics. We are forced to the conclusion that the reasoning fails, even more than the observations, to prove the theory.

But suppose that it shall finally be established beyond controversy that stammering and lisping is more prevalent among sinistrals and among mentally deficient children than among other children. What will that signify? Let us banish all preconceived notions and endeavor "to see things as they are," an attitude that disappointed Matthew Arnold told us we could never expect of the mass of mankind. We know that left-handedness is frequent in childhood—some authorities say that most children are normally left-handed—and we know that careful parents generally correct it. We know that much stammering arises from the simple habit of stuttering and the practice of imitation of stammering—Fletcher attributes most of it to imitation—and we know that careful parents discourage the stuttering and forbid the imitation of stammering. We know that much lisping is habitual, and that careful parents correct it. Therefore, when parents are careless, either through inclination or on account of deficient mentality, we should expect to find sinistrality, stammering, and lisping, on account of failure to correct them when they are readily corrective. And we are decidedly unscientific when we impute a mysterious connection between these characteristics before we have demonstrated the inadequacy—if inadequacy there be—of the evident connection, namely, the lack of correction of all three.

Finally, let us reflect that the article which has been reviewed is superior to most articles on stammering. If there is so much to question in it, what shall we say for the others? Shall we say, let them stand to perpetuate the suffering of the stammerers, to discredit American medicine and science, to encourage mistaken and corrupt practice? Or shall we say, we will criticise every old theory that is out, we will criticise our new theories before we let them out, we will make beneficial the truth that is left and thereby we will turn this ages-old disgrace to our everlasting credit.

1994 N. Los Robles Avenue.

AN UNUSUAL INFECTION FROM ETHMOIDITIS.

DR. JOHN A. THOMPSON, Cincinnati, Ohio.

Miss Bessie D., age 35 years, a school teacher of Greensburg, Ind., was disabled by an attack of sciatica early in October, 1915. The pain became so severe that she was confined to bed most of the time and could walk only with the aid of crutches. She was treated at home by antirheumatic remedies and by osteopathic massage for six weeks without benefit. She then came to this city to consult Dr. Dudley W. Palmer. Dr. Palmer's examination of the joints of the affected left leg showed no disease in the joints. Dr. Doughty's x-ray examination of the joints, teeth and the sinuses also was negative. The motion of the joints was not in any way impaired. Dr. E. W. Mitchell examined the chest November 24, and found no evidence of any disease. The patient's temperature varied from 99° to 100° each evening and was often subnormal in the morning. Dr. Palmer sent her to me December 17, 1915, for examination of the tonsils. Finding them normal, I examined the nose as a possible source of infection. The patient reminded me that I had treated her for hypertrophic rhinitis fifteen years ago. At the time I saw her, the sciatic pain and an afternoon rise of temperature were the only notable symptoms. The nose was normal, except that the membrane over the right bulla ethmoidalis did not blanch when an adrenalin spray was used to shrink the tissues. A little pressure on the congested area with a cotton-wrapped probe was sufficient to break through the cell wall and permit the escape of a few drops of pus. The third day after puncturing the cell the patient returned to the office and reported she had neither pain nor fever. I feared both would return when the small puncture closed, but it was decided to wait a few days before operating. On January 3, 1916, she came to the office saying all her symptoms had returned. The next morning at Christ Hospital, under local anesthesia, a small portion of the right middle turbinate was removed and the bulla freely opened. No other ethmoid cell was found diseased. Again there was an immediate relief of the sciatica and disappearance of the fever. She returned to her work in ten days and has remained well. Neuritis about the head from ethmoid infection is very common. Sciatic infection from this region is certainly rare.

628 Elm Street.

EDITORIAL DEPARTMENT

THE DEAF

Their Education—Improvement of Conditions—Responsibilities and Participation of the Profession.

JOHN DUTTON WRIGHT, M. A.
NEW YORK CITY.

In several instances during the past few years, physicians have themselves instituted successful campaigns, or have vigorously aided those started by others, for the betterment of the deaf in their States.

The readers of The Laryngoscope could be a tremendous force for this purpose if they were willing to actively exert their influence, and I would like to make a specific suggestion for their adoption whenever they are willing to aid the helpless deaf children of their localities.

Probably the most pressing need at present in most of the State institutions for the deaf in order to more nearly approximate the normal development of their pupils, is for the facilities for *better* training many of them in speech and lip-reading. All institutions for the deaf have now reached the point in their development where they attempt to teach speech and lip-reading to many of their pupils. Fifty years ago scarcely any attention was paid to this. At that time all institutional instruction was wholly given by means of silent means of communication: writing, finger-spelling and the sign language. With the establishment in 1867 of two schools in which no use was made of finger-spelling or the sign language, pressure was gradually brought to bear upon the older schools to adopt this so-called "Oral Method." This adoption was very much opposed by those connected with the earlier schools, many of whom were either deaf and dumb themselves or had deaf and dumb wives or relations. Influences in favor of speech and lip-reading were, however, too strong; and these schools were forced to adopt the new method to a certain extent in order to continue their existence. They devised what they called the "Combined System," in which much use was still made of silent means of communication both in and out of the classrooms, but some instruction was given in speaking and by means of speech. This system has been gradually modified till, so far as classroom instruction is concerned, the number of pupils taught exclusively by finger-spelling and the sign language is relatively small, most of the teaching in class being by means of spoken communication and writing. But the medium of communication, outside the few hours in class, is a silent one not only on the part of the pupils but by the supervisors, teachers of industries, servants and even by the principals and teachers themselves. The result is that, of the sixteen waking hours of the pupils, five, at most, are passed in a speech environment and eleven or more in a finger-spelling and sign language atmosphere. A more accurate term than "The Combined System" to describe this state of affairs would be "The Commingled System." It is this "commingled" characteristic that has caused the failure of the so-called "Combined System" so far as speech and lip-reading are concerned. The most pressing need of the state institutions is for the means of removing this "commingled" condition and for doing their oral work in a *speech atmosphere*. That is to say, they need the facilities for completely segregating those pupils that they wish to teach to speak and to educate by means of spoken language from the pupils that they wish to teach by means of finger-spelling and the sign language. So long as they are obliged to turn their orally taught pupils loose outside the classroom in an environment where finger-spelling and the sign language are used in the shops, the playgrounds, the dining-rooms and dormitories, those orally taught pupils do not acquire the facility in speaking and reading the lips that they would be capable of if they were practiced in them throughout their entire waking time. It is not difficult for any intelligent person to see the inevitableness of this result.

The chief opposition to this reform comes from three groups of persons, and combined with public ignorance and the natural indifference of the mass of the people who have no *personal* interest in the welfare of the deaf, this opposition has, up to the present, prevented the reform in most of the institutions where maintenance comes through legislative appropriation.

The three groups are:

1. The large number of deaf persons who have been educated in "Combined Schools" and who find the speech and lip-reading which they have there obtained to be, as was to be expected, wholly in-

adequate to the needs of daily life in a hearing and speaking community.

2. Those deaf persons who are engaged in teaching by means of finger-spelling and the sign language in the "Combined Schools," and who would lose their positions if the greater part of the school were devoted to oral instruction.

3. Those hearing persons who have been associated with the education of the deaf by the early methods for very many years and naturally are averse to any drastic change at this late hour in their lives.

The increasing intelligence of parents of the deaf on this subject, and of people in general, especially of physicians who see the deaf children early in their lives, is making the task of these opponents of progress more and more difficult. Most of the persons in charge of the institutions are now convinced of the desirability of such a *segregated oral department* in *every school for the deaf,* and a few more years will probably see this accomplished. The arrival of this much-to-be-desired change can be greatly hastened by the universally exerted influence upon parents and legislators of every physician in the country. Let each one do what he can in his own community. The editor of this department will be glad to supply anyone interested with literature that can be used in such a campaign.

Simplified Technic in the Application of the Schick Test.

W. Litterer, *Southern Med. Jour.*, Feb., 1917.

The author first dissolves the dried diphtheria toxin in sterile normal salt solution and injects 0.2 c.c. into, not under, the skin. A positive reaction is indicated by an area of infiltration, up to about one inch in diameter, more intense in the center and lasting about 10 to 14 days. Its disappearance is gradual, leaving a brown desquamated surface. This reaction indicates that the patient is susceptible to diphtheria; those who do not give this reaction possess a natural immunity. A pseudo-reaction, due to local anaphylaxis, is more sharply circumscribed, comes on earlier and disappears in from 24 to 48 hours. Ed.

OBITUARY.

VICTOR DELSAUX.

Born 1861. Died 1917.

Amongst the wholesale horrors of the present war, although

> "Each new morn,
> New widows howl; new orphans cry; new sorrows
> Strike heaven on the face."

yet single instances of misery sometimes bring home to us even more acutely the "weight of this sad time." The death of Jules Broeckaert in London, an exile from his native land, and now the death of Victor Delsaux, a prisoner in his own beloved country, fill us, as Prof. Tapia says in the *Revista Espanola de Laringologia,* with "una impresion de imborrable tristeza." They were not only leading men in Ghent and Bruxelles, but were both such distinguished laryngologists and had contributed such valuable work in advancing our specialty, that their names were well known to every laryngologist in the world.

Victor Delsaux was born in 1861 and spent his childhood in his native town of Fleurus. He went to school at Dinant, little dreaming of the days when this picturesque city on the Meuse would be ruined by the brutalities of war. Entering the University of Bruxelles in 1879 he devoted his first two years to the study of natural sciences. After qualifying, he passed a year in the best known clinics in Paris, and settled down to a family practice amongst the poor of Bruxelles. Whilst thus engaged he obtained the post of assistant with Profs. Capart and Delstanche *père,* perfecting himself in oto-rhino-laryngology and gradually withdrawing himself from general practice.

About this time he showed his cosmopolitan tastes for travel and culture, visiting London, Petrograd, Moscow, Zurich, Berne, Geneva, the chief Italian cities, and the Scandinavian and neighboring German countries. He went still further, visiting the Island of Madeira, where he did not forget to inspect and study its leper hospitals, and touring in Morocco where he did not omit to see its hospitals and gaols. During these travels, as later on, he formed a large circle of acquaintances with colleagues, clinics and learned societies, and from each journey he brought back observations which widened his views and deepened his sympathies, as well as books which he was continually adding to his cherished library. For he was a great reader, and owing to his linguistic talents he was able to devote himself to the medical literature of half a dozen languages.

Working so long as "medécin-adjoint" at the hospital and university work of Prof. Delstanche, it is not surprising that on the latter's death in 1900, Delsaux should be promoted to follow him as Chef de Clinique at the Hôpital St. Jean. At this time Delsaux was forty years of age, and he then started on the full and vigorous career for which he had so carefully trained himself. Not only did he lecture to students, manage a large clinic, and build up a large private practice, but he devoted attention to such things as photography, electricity, radio-therapy, the spreading of antiseptic surgery, and the diffusion of fresh-air principles, but in all these directions he gave a full measure of prodigious energy and rare talent.

He founded the *Presse Oto-Rhino-laryngologique Belge,* and remained its editor until the red ruin of war arrested the progress of science and substituted an empire of barbarism. This journal soon obtained a high scientific reputation among the researchers and literary men of all countries. His own contributions to it were considerable and made him a well-known international figure, still further increased by his travels and investigations in France, Algiers, the Netherlands, Switzerland, Spain, Canada, and the United States.

Many of us had the opportunity of being further attracted by his charming personality when we traveled on the same ship with him to Quebec to attend the Toronto meeting of the British Medical Association in 1906, under the presidency of Dr. Dundas Grant. And we also had the pleasure of welcoming him at the Belfast meeting of the Association in 1909, when he read an interesting paper on "Laryngostomy."

Delsaux had an international spirit, but it was of the sincere and generous type. Like all wise travelers, he did not go abroad to think less of his native land, but to return to it a still truer and more enthusiastic patriot, only anxious that it should advance along any of the paths of progress he had spied out during his travels. Thus he was among the first to start in Bruxelles a private nursing home, founded on what he had seen here and in the private hospitals of America. When one recalls that the *Presse Oto-Rhino-Laryngologique Belge,* carefully edited, came out weekly and punctually, that he had so many interests, and that he was such a far traveler, it is astonishing that he still found time to keep his friendships in repair. Yet there was no more sociable man in Europe, amongst high or low, rich or poor, than the large-hearted and generous Victor Delsaux. The Italians would have called him a "buonaccione," a term which is not altogether well translated by "a jolly good fellow," and the little children of the poor at the Hôpital St. Jean always referred to him as their "cher gros docteur." For children he always had an affection, and even when his country was in the hands of the Bosches he worked hard at establishing and managing a "mother's canteen" where more than 12,000 destitute children have been saved from perishing in Bruxelles from want of food.

Just before the war he was engaged, in collaboration with Lermoyez, of Paris, and Moure, of Bordeaux, in producing a monumental work on otology and laryngology. I do not know whether his part has been completed, but I hear that his heroic and strenuous character is proved by the fact that, even during the last year, although a prisoner in his own country, he had been able to complete an important "Traité de Laryngologie Pratique."

Last winter he was stricken with appendicitis on January 25. He died on February 3, and was followed to his grave by a crowd of mourners on a day of freezing cold, and with the German flag flying overhead in a bitter wind.

He lies in the cemetery of Ixelles alongside of his wife, whom he lost in 1891, after a short two years of wedded life. For her memory he always retained a touching devotion.

It is heart-rending to think that Belgium, brutally beaten down by "military necessity," should have lost in Delsaux such a gallant son. But it is not only Belgium, it is the science and humanity of the civilized world which share in this loss. Some of us will look forward sadly to visiting that cemetery at Ixelles, when the German flag no longer waves there.

StClair Thomson.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

(Continued from page 596)

DR. MACPHERSON suggested the possibility of a double infection, i. e., syphilis and tuberculosis.

DR. HERZIG asked if any anti-specific treatment had been given.

DR. FORBES said that possibly all had seen cases of mixed types of infection,—both tubercular and leutic,—where the laryngeal condition has promptly improved under treatment by mercury, the tubercular condition having been cured. Dr. Lynah had suggested that the active process in the larynx might be luetic. Dr. Dworetzky of the Otisville Sanatorium found cases with tubercular elements healing and the remaining laryngeal condition luetic in character, which again improved under the luetic treatment. There is, then, always the possibility, as suggested, of a double infection.

DR. KERNAN asked if there was any objection to putting the two throat cases under antispecific treatment with the idea of making a diagnosis? He had not heard this suggestion made by any of the members with that in view.

DR. IMPERATORI said that he had corresponded with Dr. Dworetzky regarding his laryngeal cases at Otisville, in relation to cases under his own care at Riverside Hospital, with reference to laryngeal tuberculosis and a positive Wassermann. The doctor said that many cases had positive Wassermann, with other evidence of lues. It is understood that there is some substance in those who are tubercular, that may give an apparently positive Wassermann. It would seem that we shall have to go further before we can say that a case of tuberculosis is also positively luetic unless we have some other clinical evidence—possibly a therapeutic test.

DR. KING said that the boy had had no specific treatment, and no treatment of any kind since coming under his observation. He had simply been studying the case for about two weeks. He had seen one or two similar cases where the diagnosis was difficult, which subsequently developed tuberculosis. In one case, seen about a year ago, Dr. Darling had taken an x-ray picture and made a diagnosis of tuberculosis, and later the sputum test was positive on several occasions. The patient was sent away, and she has gone down very rapidly since going to the sanatorium. Another case seen about two years ago had a similar condition of the epiglottis. The infiltration was not very great, but the patient had been to a sanatorium. Dr. King said he thought the infiltration in the epiglottis had not entirely healed up.

DR. B. C. DARLING demonstrated the plates in Dr. King's case. Single Roentgenograms of the chest will not show up any but the most pronounced lesions. In these stereoscopic plates there is a general slightly dense fan-shaped area extending upward from the root of the right lung, some of which is probably old tuberculosis, for the more white or denser area is supposed to be fibrous. Then there is a general cloudy appearance in the fan-shaped area of more recent and active disease. The other apex shows a similar condition. On the left below, toward the lower lobe, are smaller areas of the soft shadow. The dense fibroses are probably slight evidence of some long continued tuberculosis; the soft, cloudy shadow would seem to be more recent. It is not, however, a clean cut case, and the findings are not very decided.

Two Cases of Recurrence of Chronic Stenosis of the Larynx of Six and Ten Years' Duration, after Detubation. Dr. Henry L. Lynah.

(To be published in a subsequent issue of The Laryngoscope.)

Enlarged Thymus Radiogram. Dr. H. H. Forbes.

In the plate, the enlarged thymus was shown very distinctly coming out at the right of the sternum and extending well over to the left. Dr. Forbes stated that the case was interesting for two reasons: first, in that it was an enlarged thymus occurring in a child of fourteen with a history of frequent illnesses, showing that,—contrary to the opinion of most clinicians,—the patient had decided resistance; secondly, the frequency with which enlarged glands (thymus) are now seen, following the advent of the x-ray. The child was sickly up to seven years of age, when its general condition improved; from seven to fourteen he was somewhat stronger. He was admitted to the Post-Graduate Hospital in the service of Dr. Macpherson,—through whose courtesy the case was presented. The boy had had frequent attacks of a spasmodic laryngeal type, usually coming on in the evenings,—more apt to occur on cold, chilly days or after exhaustion. He was undeveloped physically and mentally. The attacks or spasms of the larynx would be accompanied by swelling and congestion of the neck, and this was the symptom which aroused the attention of the family and occasioned them most anxiety,—not the spasmodic cough or the asthma, but the fact that he had this spasmodic cough and with it the tremendous swelling of the soft tissues of the neck.

The larynx was normal, and the view by the indirect method was normal for a short distance into the trachea, nothing being seen to indicate any local condition of the larynx or trachea. An x-ray picture was then taken. It was hoped that at the next visit a bronchoscopic tube could be passed and the diagnosis completed, but the patient did not reappear and it had been impossible to trace him. It was therefore impossible to obtain fuller information about this unusual case which had lasted over a period of seven years.

The prevailing idea has always been that with an enlarged thymus not much operative work could be done. Most of these patients die suddenly and are poor surgical risks; yet Dr. Lynah had just told of a case with a tremendous thymus in which he had performed a tracheotomy under stress, and the child went on in good condition. Dr. Forbes said that in two other instances of children with enlarged thymuses he had done extensive bronchoscopic work, difficult and repeated, and there was apparently no difference between these children and others.

Dr. Imperatori said that Dr. C. Jackson had reported successful results from thymectomy. He relates such a case in his book on "Peroral

Endoscopy." Two cases, that were seen in Dr. Harmon Smith's clinic at the Manhattan were diagnosed by endoscopy—the enlarged thymus flattening the lower trachea. Both these cases suffered from dyspnea and both were in infants. Later the diagnosis was confirmed by radiograms. Unfortunately, both of these cases were seen before x-ray therapy was used for this condition and the cases lost track of. Dr. Jackson has abandoned thymectomy for x-ray treatment.

Dr. Lynah said that it was his belief that many more children have enlargement of the thymus gland than we ever dream of, and it was only while under great excitement or while under esthesia that the gland becomes enormously engorged with blood and causes tracheal compression stenosis. He also thought that the enlarged thymus may be readily overlooked by x-ray findings if there was not sufficient engorgement of the gland at the time of the radiographic picture. This had been demonstrated by him in two cases in whom there was practically no thymic shadow in the ray picture, but there was very definite tracheal compression when tracheoscopy was performed. Asthmatic symptoms were present in one of the children at the time of the x-ray examination and absent in the other. He thought that the tracheoscopy without anesthesia and the slight struggling of the child was probably sufficient to engorge the thymus and demonstrate the compression of the trachea. The little girls on whom the low tracheotomy was performed under local anesthesia had very severe thymic shocks as was proved on opening the tissues of the neck, as an enlarged portion of the gland, 3 cm. in length appeared in the wound. The gland was held out of the way by the retractor and the trachea opened. The trachea was noted to be almost completely collapsed anterolateral on the left side. The boy also had rather severe shoc kfollowing his tracheotomy which was performed by Dr. Gover of the house staff; this boy did not show any shadow at the time of the radiographic examination but did show tracheal stenosis when examined by tracheoscopy. Dr. Lynah said that he intended to resect the thymus of the girl as soon as it was impossible to decapsulate her owing to the enormous amount of tracheal collapse from thymic pressure shortly after the tube was removed. The child, however, had been under x-ray treatment by Dr. LeWald but not for sufficient length of time to make any depreciable shrinkage in the gland. Dr. Lynah heartily agreed with Dr. Imperatori that the x-ra ywas the best and simplest treatment for these cases; at the same time Dr. Jackson had demonstrated that thymic resection was not a fatal procedure and he thought this case was well suited for this method.

Dr. Forbes said that Dr. Hirsch had that morning told him of a thymus case which had a remarkable atrophy and it was only necessary to give two treatments,—the exact strength of which was not stated. This child was three years old, and there were two actual exposures to the tube at an interval of a few weeks.

Severe Epistaxis in a Woman; Diabetes, Myomata of Uterus, Otitis Media Acuta. Dr. Wolff Freudenthal.

Dr. Freudenthal said that the case which he wished to report was interesting on account of the numerous complications. On January 16, he had been called up in the middle of the night by a man who said that his wife had been bleeding since evening. They managed to bring the patient to the office, and he learned that a physician had been called in who had left a prescription for adrenalin, but that it had just the opposite to the usual effect, since it increased the bleeding. Later on it became more profuse and other physicians were called in. When the patient reached the office she appeared very anemic, but after some difficulty the bleeding was checked by plugging the nose anteriorly. She was about forty-five years of age, and the idea of a vicarious menstruation suggested itself to him, as he had seen quite a number of such cases. He asked the patient about her menses, and she said that she was just menstruating, that it occurred every three weeks, and was very profuse. Her family physician stated that she had myomata of the uterus. Dr. Freudenthal said that naturally, he advised their removal, and it was decided to have it done. The patient was then sent home with the usual instructions for rest. The next day she was seen at her residence, and the packing was removed, and this was followed by the same profuse bleeding. In the middle of the night his assistant was called up, and again there was difficulty in checking the bleeding.

The next morning the patient complained of terrible pain in her teeth. She had had a tooth extracted a short time previously, and she was suffering such pain that she wanted this one also extracted; but considering the epistaxis from the nose Dr. Freudenthal advised that that be postponed. He was under the impression that the bleeding would not stop entirely until the menstruation ceased, and so it was. They ceased together. The patient was given narcotics and gradually the bleeding became less. It was afterward easy to stop the nose with applications of ferro-pyrene (Knoll).

Following this, the patient had an acute otitis media and the drum membrane had to be incised, which gave relief from that source. Then the ear began to discharge, and five days later the patient walked around, and Dr. Freudenthal was able to examine the throat more carefully, and was much surprised at its appearance. There was considerable edema and an irregular ulceration of the posterior wall of the pharynx. There was no tuberculosis; no syphilis. The urine was examined for sugar, and was reported to contain 4.5 per cent of sugar, plus acetone. Naturally, this upset the plans for the removal of the myomata, and it was decided to have the x-ray applied, which was done, with excellent results. After two applications the patient felt much easier. Dr. Freudenthal said that in his opinion sufficient attention is not given to x-ray therapeutics in our specialty.

In the meantime the woman felt better, and two of her teeth were extracted under cocain. Then the ear began to bother her again. The swelling behind grew bigger, but it was not desirable to operate on a diabetic patient with a high sugar percentage. When the percentage was reduced to 3, Dr. Freudenthal operated under gas-oxygen anesthesia, having administered one-fourth grain of morphin beforehand. No extensive operation was contemplated, but the intention was to work as rapidly as possible and let the pus out. The patient stood the operation remarkably well; the healing was uneventful, really quite exceptional under the circumstances. The patient is now undergoing the Allen treatment.

Dr. Freudenthal said that two important points were brought out by this case. First, that the possibility of diabetic complications was first pointed out by a laryngologist; the family physician, a very good and careful man, had not thought of examining the patient for that condition. Dr. Freudenthal had seen such cases occasionally, and had directed attention to this complication, but very little notice has been taken it. Only recently Dr. Arrowsmith has reported such a case, but there is little or no reference to the matter in literature. The other point is the feasibility of operating on patients with a high amount of sugar. Dr. Freudenthal said that several of his patients had been operated upon by general surgeons, and some of them had died shortly after a very slight operation. It would be very interesting to know the opinion of the members upon this point.

Dr. Arrowsmith inquired if Dr. Freudenthal's patient had any ulcerations of the nasal mucous membrane. He then told of one of his own patients who had suffered from terrific attacks of nasal hemorrhage with ulceration of the septum which never healed, and who finally died of diabetic coma. The epistaxes were frequent and severe. In another case which had come under his observation within the last year, the patient had a diffuse diabetic ulceration of the throat and had 5 per cent of sugar in the urine. This patient was put on the Allen treatment and the ulceration became very much better, and when last seen—two or three weeks ago—there was only a very small area of ulceration remaining on the under surface of the epiglottis.

Dr. Seymour Oppenheimer, referring to the question of the mastoid operation on diabetic patients, said that it was not so much the matter of glycosuria as of acetonuria. It is true that those patients who have a glycosuria often show a decided acetonuria post-operatively. He said he had had occasion to operate on quite a number of mastoid cases complicated with glycosuria and in all but two, he attempted to do the operation under local anesthesia. The ante- and post-operative care of these patients is extremely important. In several patients who showed a high percentage of sugar and where the otitic symptoms did not require urgent interference, strict dietary regulations were employed to improve the condition prior to operation. The post-operative care is quite important; not so much the diet, for there is naturally a decided restriction of food after operation, but alkaline medication both by mouth and per rectum is of great value.

Dr. Guttman said that these cases are very interesting. He then asked if Dr. Freudenthal had made the diagnosis of diabetes only by the aspect of the condition, or whether he judged by the sweetish odor; and told of a case of acute mastoiditis in which he himself had made a diagnosis of diabetes, based on the associated odor.

Dr. Guttman said that he also had unfortunate results in operating on these cases. In one instance the patient was the mother of a physician, and took the ether quite well, but died two weeks after the operation.

In regard to the bleeding, Dr. Guttman told of a diabetic patient under observation with polyps in the nose, and the question was under consideration as to whether or not to operate. It is very common to have bleeding in these cases.

Dr. Ernst Danziger asked if the ulceration in the pharynx was superimposed on a dry purple red membrane.

Dr. MacPherson, referring to the amount of sugar in diabetic cases, said that the sugar in the blood is a better criterion than the sugar in the urine. The patient may be free of sugar in the urine and yet be in a bad diabetic condition, which can only be demonstrated by examining the blood.

Dr. Hurd told of a very peculiar case. The patient was a woman with a mastoid which had been neglected for several months. He could not recall the exact percentage of sugar, but she had an acetonuria also. He gave her some morphin and injected her for local anesthesia before operating on the mastoid. She became very much excited; ether was given, also chloroform; the operation was performed, and the patient was returned to bed. In twenty-four hours no trace of sugar could be found.

Dr. Norton L. Wilson said that Dr. Hurd's case might be like one that he had operated upon under local anesthesia, and after the operation could not find any sugar; but he suspected the man never did have sugar. In another case a sinus in the external canal leading well down into the tissues had existed for two months. The man was sent into the hospital, and examination showed both glycosuria and acetonuria. It was considered unwise to operate upon him, and he was put upon antidiabetic treatment, and the whole condition cleared up promptly.

Dr. Freudenthal, closing the discussion, said that the nasal condition did not present anything especially indicative of diabetes . The patient had a dry rhinitis and a dry pharyngitis; and anteriorly there was an ulceration such as is seen in these dry conditions.

Replying to Dr. Oppenheimer, he said that the post-operative as well as the ante-operative treatment is very important. He had talked the matter over with an internist, and gave the patient one dram of bicarbonate of soda per rectum right after the operation.

The point brought out by the Chairman (Dr. MacPherson) was very important, too.

Referring to the case cited by Dr. Hurd, Dr. Freudenthal said that he had heard of such cases before. There was a possibility that through some neoplasm or other pathological condition, the glucosuria is produced. That matter is now being studied. Recently a surgeon had told him of a case of appendicitis, where there was positively sugar present, as determined by a number of men, but the sugar disappeared after the removal of the pus infected appendix. Whether a neoplasm, such as the myomata in the case just reported, or the abscess in the ear, could have produced the sugar, he did not know, but such things have to be considered.

Replying to Dr. Guttman, Dr. Freudenthal said there was no special odor. He made the diagnosis of diabetes by exclusion; there was no syphilitic condition, or anything else.

Dr. Hurd said that the woman to whose case he had referred was the patient of a very able practitioner, and had been running a certain percentage of sugar for a long time. After the operation the sugar percentage dropped right down.

Stricture of the Esophagus. Suspension. Dilation: Sudden Cessation of Respiration. Tracheotomy. Pneumonia. Subsequent Death. Necropsy. Findings; Carcinoma of the Esophagus. DR. ANTONIE P. VOISLAWSKY.

Mr. F. J. S., age 37, New York City, was referred to me at St. Luke's Hospital on the 29th of January, complaining that he could not swallow his food. This condition had been coming on gradually for a year and during the last two months he had very great difficulty in swallowing solids. His condition kept getting worse and three weeks prior to admission he could take nothing but soft solids and liquids and, for the last few days, had been taking only a small quantity of it at a time. At times a small quantity of fluid was regurgitated. Prior to ten days he had no pain but latterly had slight pain in chest at intervals.

It seems that about twelve years previous he had had his throat cut in a brawl (his family thought it was attempted suicide). He had been removed to Bellevue Hospital, the wound sutured and he was discharged 18 days thereafter. Following the injury he had trouble similar to what he now complains of and for one month after he left the institution he could not swallow solids. Following the injury his tongue was very much foreshortened and would turn to the right when he attempted to put it out of his mouth. The glands under the tongue were slightly enlarged. There was a long scar about the level of the thyroid cartilage extending in a horizontal plane about two inches on each side of the median line. No glands in neck enlarged. Lung expansion good and equal, no dullness, no rales. Wassermann negative.

His was a most difficult case to examine on account of the inability to put out his tongue. Besides a paralysis of the left vocal cord, which was compensated by the right meeting it past the median line, there was evidently a stenosis of the esophagus and this diagnosis was made at the time.

On January 31st, the patient was suspended by the Lynch method, under local anesthesia. Owing to the condition of the tongue, small bougies were passed into the esophagus with great difficulty. A stenosis was located eight inches from the incisor teeth. The bougies passed were sizes 1, 2 and 3 Fraass, the largest equivalent to about 35 French. On withdrawal they were but slightly streaked with blood. Patient was put to bed and for several days was able to swallow fluids without difficulty, but soon the stenosis returned and on February 7th I asked Dr. Nathan W. Green, attending surgeon, to try and further dilate, which he did. After passing several bougies he succeeded with a size 2a, which passed readily. There was no coughing and no pain experienced during the procedure. Next day, February 8th, at 8:35 p. m., the patient suddenly experienced great difficulty in breathing, became cyanotic and it became necessary for Dr. Gibby, the house surgeon, to perform immediate tracheotomy. Patient was resusitated, but on the 12th of February he died of pneumonia.

The interesting part of this case developed at the post-mortem. The findings follow:

Beginning 4 cm. below the epiglottis and extending down upon the mucosal surface 7 cm. is a tumor mass, granular in appearance, protruding into and almost occluding the esophageal lumen. The growth infiltrates and extends through the esophageal wall and can be traced into the lower pole of the left lobe of the thyroid. Upon opening the trachea a verrucous growth measuring 2x1.5 cm. in area, is found, situated in the posterior wall and to the left of the midline. This growth is continuous with that in the esophagus, and through its middle point is found a fistulous opening leading into and perforating the esophageal tumor. The sinus is 4.5 cm. below the crico-thyroid membrane, through which a tracheotomy wound leads. The trachea below the neoplasm is congested, the mucosa swollen and edematous, and covered with thick mucus.

The lymph nodes in the superior mediastinum are not enlarged. Peribronchial nodes are enlarged and anthracotic, and one node situated over the right bronchus near the bifurcation of the trachea shows grayish-white nodular areas besides the anthracosis. (Microscopical examination shows no involvement by tumor.)

Microscopical Examination: Sections of esophagus through the tumor region show the muscle largely replaced by a neoplastic growth made up of small alveolar groups, strands and large sheets of cells of squamous epithelial type, supplied with a well formed connective tissue stroma, and forming many epithelial pearls. Only remnants of muscle tissue show here and there through the sections.

Section of lymph node shows that it is not involved.

Diagnosis: Epithelioma, squamous cell, of esophagus.

Replying to inquiries from Dr. Hunt and Dr. Forbes as to whether x-ray pictures had been made, Dr. Voislawsky answered in the affirmative; but nothing had been revealed by the x-ray.

Dr. Guttman said that there was no doubt of the diagnosis in this case; the only question was whether the diagnosis could have been made in vivo. If he understood correctly, the patient had tried to commit suicide twelve years previously and had not had any trouble with regard to swallowing for twelve years after the healing. It seems hard to connect the later difficulty in swallowing without any apparent cause with the earlier attempt at suicide. Possibly if the case had been examined in a different way it might have been diagnosed. In a case seen a year and a half ago, where a ....examination was made, the esophagoscope and x-ray, the diagnosis of carcinoma was made in vivo. It was in connection with the trachea. The treatment had about the same result as in Dr. Voislawsky's case, but there was some satisfaction in making the diagnosis in the beginning. In sounding with the probe, more care should have been used; for if bougies are used without sufficient care they may cause perforation, mediastinitis and pneumonia. That may not have been the case in this instance, but it was open to suspicion.

Dr. Forbes said that as he understood Dr. Voislawsky, the work had been done blindly in the esophagus aside from the view obtained by the use of the suspension apparatus, which, of course, only exposed the hypo-pharynx.

Dr. Voislawsky inquired what Dr. Forbes meant by blindly.

Dr. Forbes replied: "Without observing the rule laid down by Dr. Chevalier Jackson that one should not go into the esophagus without seeing the picture before him. In other words, with the use of the electrically illuminated tubes."

Dr. Voislawsky said that he had called attention to the fact that the man was 37 years old, an age when one is not looking for carcinoma. In the second place, he had pointed out three times that the man's tongue was foreshortened as the result of his having tried to commit suicide, and that it was therefore almost impossible to examine his larynx with a mirror, as it was impossible to pull out the tongue, and almost impossible to depress it. Given a patient of that kind under suspension, the difficulties could be easily imagined. It might be taken for granted that in St. Luke's Hospital such a patient would be examined with the x-ray. All of these precautions were carefully observed on the date of admission, and the suspension was made two or three days later.

Dr. Voislawsky said that he had taken up the time required for presenting this case, first, because the patient was only 37 years of age, and carcinoma at the site of the wound occurred twelve years following an attempted suicide. Mutilation of the trachea and the tongue and paralysis of the cord in all probability happened at the time of the attempt at suicide. Anyone who had ever dealt with a malformation of that kind would readily understand the difficulties presented.

Salivary Calculus: Report of a Case. Dr. William W. Carter.
(To be published in a subsequent issue of The Laryngoscope.)

Presentation of the Voltolini Transilluminator, etc. Dr. Wolff Freudenthal.

Dr. Freudenthal said that he thought it might interest the members to see the original apparatus and instruments used by Voltolini in the transillumination of the larynx, which had been sent to him personally by Voltolini before he died. First, there was an electric lamp and a little glass tube to be filled with water, which served two purposes: first, to prevent the skin from being burned by the electric light, and, second, to act as a bi-convex lens for the concentration of the rays of light.

Dr. Freudenthal then showed blue glass tubes for experiments with the actinic rays, and remarked that it was unwise to abondon the use of the actinic rays entirely for they do good in certain cases. He also presented the first apparatus for the transillumination of the antrum, and Voltolini's apparatus for the transillumination of the posterior nares. The last one gets hot easily and had to have cold water run through. That is not necessary now, but it is of historic interest. Dr. Freudenthal said that he had demonstrated the transillumination of the antrum many years ago and said at the time that it was an important aid. but could not be relied upon in every case. Voltolini himself, when experimenting with it, did not know the difference between an empyema of the antrum and a cyst. Now we can make that diagnosis very easily.

Dr. Imperatori asked if the Voltolini illuminator illumined the larynx as well as the method shown by Dr. Hurd at the last meeting.

Dr. Freudenthal said that it seemed to him to be about the same thing. It illuminates the entire region, and presents a very beautiful picture.

Someone asked what the transillumination of the larynx was used for.

Dr. Freudenthal replied that it could be used to estimate the vertical diameter of the vocal cords, and it might be of value when the question of malignancy arises. There have been some cases where diagnoses have been made in the early stage. He himself had made a diagnosis of malignancy in a circinoma of the trachea, simply by the dark shadow that was thrown; but these cases are very rare, and he seldom employs the method now; but it ought to be employed more frequently. Particulars will appear in a special article to be published soon.

A New Instrument and Technique for the Enucleation of the Tonsil.

Dr. Jacob Braun (by invitation).

(Published in the July, 1917, issue of The Laryngoscope.)

Dr. Seymour Oppenheimer said that he had recently had the opportunity of seeing a new tonsillotome devised by Dr. Jacob Braun, of the Children's Clinic of the Department of Health, and would like to bespeak for him the opportunity of presenting his instrument.

DISCUSSION.

Dr. Seymour Oppenheimer said that he had seen Dr. Braun use these instruments, and that they had impressed him as being mechanically hard to employ, although that might be an unjust impression, for one could develop a technique with these instruments just as with other types of procedure. We have all gone through a variety of operations, discarding one and then adopting another. He would hardly like to discard his present procedure for this method, although he might do so later. Dr. Braun had impressed him by his deftness in using these instruments and one could readily see the advantage of having the operative field so thoroughly dry, while first one tonsil and then the other is removed. The bed from which the tonsils were removed was perfectly clean and smooth, and the operation was followed by much less hemorrhage than in another case which he performed subsequently in order to demonstrate to Dr. Braun his own procedure. The instrument certainly has some very pretty points, but whether it will be generally adopted is a question.

Dr. Danziger said that he had had an opportunity only the day before to use the instrument. He tried it under the direction of Dr. Braun and was thunderstruck with its possibilities. Naturally, when one uses it the first time it is difficult to get all the tonsil at the first attempt, but the ease and efficiency of the method are surprising. If you want to prevent aspiration you may use an aspirator, but there is no bleeding. Furthermore the pillars are left absolutely smooth. The technique is not difficult, and he had been very much impressed with the instrument.

Dr. Norton L. Wilson asked why there is less bleeding from this than from any other snare operation. Is it because Dr. Braun first crushes the tissue with the blade of the tonsillotome?

Dr. Danziger said that Dr. Braun does not crush it—he merely squeezes it. There was no crushing.

Dr. Harmon Smith said that the method employed involves the same principle used by Sir St. Clair Thomson, only Dr. Braun had combined the process. It would seem to necessitate considerable employment to acquire the technique, as the instrument was complicated. It has its virtues, but in a large clinic, where fifteen or twenty cases are to be operated on in an afternoon, it was to be feared that this method would be too slow. The Sluder method has little trauma and the bleeding is slight, and this method seems to offer very little advantage over Sluder's.

As to the claim that there would be less trauma than with a dull snare, Dr. Smith said he could not appreciate the difference, that any dull dissection would cause more trauma than a sharp dissection. The finger enucleation gives less bleeding but heals less readily and there is more after-pain and more sloughing, and as one departs from this extreme of dull dissection, just so much is the trauma lessened and the hemorrhage increased.

Dr. Braun, in closing the discussion, said that the advantages could be fully appreciated only by using the instrument. Anyone familiar with the Sluder technique could readily use this one properly. There is no difficult technique to be learned, as one can employe the instrument easily with the first case. Furthermore, all the operations in the throat should be done by the sense of vision rather than that of touch. With the Sluder technique, the finger is used in the engagement of the tonsil in the great majority of instances. With the technique described, it is not necessary to use the finger; everything can be determined by sight, and one can accurately see the line of cleavage. The lessened amount of hemorrhage is due to the fact that no sharp instruments are used, so that the blood vessels are crushed and not cut. The tonsil is pulled out of its bed and snared just in the line of cleavage, and the capsule is split. All that is crushed through is the mucous membrane and a very thin layer of connective tissue which serves to attach the tonsil to the intra-pharyngeal aponeurosis.

Dr. Braun said he made no point as to the length of time required for the operation; that if one could do a case in five minutes, not including the anesthesia, it could not be called a prolonged operation. No case requires over five minutes, including removal of adenoids. The time of operation will decrease with increasing familiarity with the technique, so that the operation may be performed in three minutes or less.

Spasmodic Asthma. R. H. Babcock, *Jour. A. M. A.*, Feb. 10, 1917.

Babcock believes that the disease is a sensitization due to protein absorption from some focus and in treatment all sources of such absorption must be eliminated if results are to be expected. The commonest site of foci is in the naso-pharyngeal region or the nasal accessory sinuses, though the tonsils may be the chief site.

Ed.

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ORIGINAL COMMUNICATIONS.

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THE SOCIETY OF PROGRESSIVE ORAL ADVOCATES: ITS ORIGIN AND PURPOSE.

DR. MAX A. GOLDSTEIN, St. Louis

Some months before the Hartford Convention of American Instructors of the Deaf I received an invitation from the Program Committee to present an address before the oral section. I accepted this invitation conditional on my ability to attend the meeting.

I was surprised and somewhat embarrassed at the subsequent correspondence pertaining to this invitation, in which the official request for this address was politely withdrawn.

I am not unfamiliar with the internal politics of a national convention of educators, medical men, and other professions, and this particular instance offered no especial difference in diagnosis.

I recognized the machinery that was responsible for the recall of this invitation; parts of the mechanism had been too freely oiled, other parts had become rusty, still others were evidently misfits—all working to cross-purposes and hardly conducive to a smooth-running mechanism. Such was my personal introduction this season to the Convention of American Instructors of the Deaf.

In attempting to analyze the complexion and character of this organization, I find a number of conflicting elements that offer sufficient reason for the lack of effectiveness in such an important national body. There seem to be several distinctly opposing factions: one, the advocates of pure oralism; another, adherents to the manual and sign methods; the third faction in this organization is known as the followers of the "combined system."

One of the inelegant figures of speech that has received but little recognition in rhetorical classification is "word juggling." The best example that I can find of "word juggling" in the field of education of the deaf is "*combined system.*" The very expression of this phrase rings inconsistent. I would define it as an educational compromise, a political subterfuge, and a personal injustice to pupil, teacher, and institution.

The education of the deaf is subject to evolution and progress like all other educational measures. The past quarter of a century has witnessed the development of pure oralism as an individual system of instruction of the deaf. It has met with tremendous handicaps in its upbuilding, especially at the hands of the advocates of the manual and sign methods; strange to say, this opposition has been most intense here in America, where progress in every phase of human development seems to have been given its greatest impetus. Historically it would be interesting to trace the origin of these antagonistic influences, but such is not the purpose of this message.

I regret that the conflicting influences of the executive management of the Hartford Convention placed me in so embarrassing a position that I could not feel free to attend this meeting. There was so much for me to learn there, and I regret that any man or committee should be empowered to place an embargo on knowledge. It also would have offered an interesting opportunity for psychological study. I would have been glad to meet the leaders of the various factions that compose this national organization and to analyze the motives that actuate them in presenting and maintaining their various viewpoints. It would offer much food for thought and also food for tangible and concrete expression to see men and women who represent a great and noble cause working at loggerheads in maintaining their political and pedagogical strength, revealing personal jealousies, and at times losing sight almost entirely of the splendid cause which they represent—*help for the deaf child.*

My investigation of the antagonistic relations that have existed between the signers and oralists for many years lead to but one painful conclusion, namely, that there is no better understanding to-day than there was ten years ago. *How, then, does such a national convention promote the welfare of the deaf child if the influential factors responsible for his education continue in an agreement to disagree?*

True, there is the enthusiast and advocate of the "combined system;" he, too, must have his day. To me the "combined system," which represents a compromise between the signer and the oralist, is in its net results very much like the problem of adding apples and pears to get peaches. It is a practical impossibility if efficiency of either system is its goal.

One of the most important reasons for the creation of the "combined system" is the politics of the State school coupled with the demands of educational progress. There are many superintendents of State schools and many of their teachers who have not investigated or admitted with an unbiased mind the tremendous possibilities of the exclusive oral training.

Even if the State superintendent were inclined to develop pure oralism in his institution, the politics of his school and of the board of control in that State would force his hand in the appointment of some of his teachers, many of whom hold positions by virtue of political preferment rather than for their actual ability to teach a deaf child efficiently.

The "combined system," therefore, provides the necessary political loop-hole for the reappointment of sign teachers and the introduction of some few oral teachers, to satisfy the protests of progressives, reformers, and other foreign bodies injected into the mechanism of the otherwise smooth-running politico-educational machine.

What, then, does a convention of instructors of the deaf, composed of these heterogenous forces, actually accomplish? I have scanned the reports for a number of years of these conventions and from my humble viewpoint the net results are hardly in proportion to the amount of energy expended. There are men and women in these conventions whose influence could be made a powerful factor for the advancement of this noble cause. There are papers presented and ideas suggested which, if given a fair consideration and actual application, might do much toward improving this special educational work. It is deplorable, therefore, that in the face of such splendid possibilities so little that is tangible and practically applicable is actually accomplished.

I contend, therefore, that a national organization of educators must have not only a definite purpose and an ideal toward which every individual member of such organization is striving, but must also develop an amicable coöperation of all of its factors and forces and bring the combined efforts, brains, energies, and influences to a noble focus.

What is true of the Convention of American Instructors of the Deaf to a great degree has also been demonstrated in a lesser measure in the younger national body, created by the oral workers—the American Association to Promote the Teaching of Speech to the Deaf.

As pure oralism gained larger recognition the far-sighted and influential educators of the older organization evidently sense the observation that I have just made, namely, that the cause of pure oralism could be more effective in an independent organization, and this evidently was responsible for the creation of the latter body.

In a conversation a few weeks ago with three or four of our best-known, experienced teachers, I casually asked, "Who is the executive officer of the American Association to Promote Teaching of Speech to the Deaf, and when and where is the next meeting to be held?" To my surprise, I could get no answer from any of them, and was referred to the advertisement of this organization in *The Volta Review*. To the present date I have not been able to ascertain when and where the next meeting of this Association takes place.

One of the cognosceti who is thoroughly familiar with the inside history and workings of this organization writes: "I regret to advise you that the date for the next meeting of the American Association to Promote the Teaching of Speech to the Deaf is still indefinite. It is reported that a meeting may be held in 1918 if 500 new members among the teachers of the deaf are secured. This will help insure the necessary operating expenses. Even the assurance of the expenses of the meeting may not be all sufficient to secure this meeting, as several factions have developed under the leadership of influential men. One faction declares that the meeting will take place soon: another feels that there is no necessity for such meeting at the present time."

What a pathetic state for this Association to be in! There are important problems, many awaiting solution at the hands of these experienced teachers and authorities. The convention and coöperation of these interests again depends on the adjustment of political and personal differences between a small number of the leaders.

Since the organization of the Central Institute for the Deaf three years ago and the practical association between the experienced teachers of the deaf and the ear specialist the importance of a constant and closer coöperation of these two forces has become keenly apparent. The success of this institution and the development of such new phases in the work as we have already been able to introduce has been the result of frequent conferences between the teachers and myself and the maintenance of one ever-present and vital factor —*coöperation.*

Coöperation is the keynote of success in every enterprise, institution, convention, or other body where various forces, talents, and influences are present.

A valuable adjunct to the smooth-running character of any machinery driven by brains and man is democracy. Coöperation and democracy is a combination that always spells success. It is the absence of coöperation and democracy that has hampered the progress of the Convention of American Instructors of the Deaf, and this also threatens the vitality of the American Association to Promote the Teaching of Speech to the Deaf.

Based on the principles of coöperation and democracy, we have dared to organize another society, with the hope that these principles may be definitely maintained as the foundation stones of this new structure.

At a meeting of teachers, alumni, and post-graduates of the Central Institute for the Deaf, this new society was created in July, 1917, in St. Louis. Its name: *The Society of Progressive Oral Advocates.* Its purpose: to advance educational measures of interest to the deaf along purely oral principles. Its membership: open to everyone interested in the oral education of the deaf.

The Executive Committee of this new society announces the following program:

1. The first annual meeting of the Society of Progressive Oral Advocates will take place in St. Louis in July, 1918.

2. An interesting program of papers and demonstrations has already been promised.

3. A comprehensive survey of teaching methods, number of pupils per teacher, qualification of teachers, equipment, proportion of pupils taught orally and by signs, complexion of the governing boards, methods of appointment of such boards—in short, a survey of as much detailed information as can be acquired of the operation and maintenance of every State school for the deaf and of all departments for the education of the deaf in the public schools of the larger cities—will be presented for consideration and discussion.

4. Following the discussion of this survey a resolution will be introduced which has for its purpose a standardization of schools for the deaf similar to the one that became effective a few years ago through the influence and agency of the Rockefeller Institute, in

creating a standard of efficiency for medical colleges and the medical departments of teaching universities.

The organizers of this new society feel that there is much to be done in this important field of special education, and that the success of such work depends absolutely on coöperation and democracy.

This society will draw additional strength for support in the coöperation of a number of prominent ear specialists in various medical centers of this country.

The several national associations of ear, nose and throat specialists have already demonstrated their interest in the education of the deaf in the past few years. Important symposia have been held at the annual meetings of these societies in which prominent educators of the deaf and ear specialists participated in the program.

I cite the National Otological Congress in Boston in 1912; the American Larngological, Rhinological and Otological Association in Washington in 1914; the American Academy of Ophthalmology and Oto-Laryngology in Chicago in 1916; the American Otological Society in Washington in 1916, and the American Academy of Ophthalmology and Oto-Laryngology in Memphis in 1917.

At all of these meetings practical demonstrations of the work done in the education of the deaf child were presented and a liberal discussion participated in by the ear specialists and teachers present. We hope to effect an even closer coöperation between these active forces, and the call of the first annual meeting of the Society of Progressive Oral Advocates must tell its own story.

Everyone interested in the progressive oral education of the deaf child is eligible to membership in this society and is hereby invited to join. Membership dues are one dollar per year, and the secretary is Miss Augusta Roeder, Central Institute for the Deaf, 818 S. Kings Highway, St. Louis. A copy of the constitution and by-laws will be furnished each applicant for membership.

3858 Westminster Place.

TWO HUNDRED CONSECUTIVE TONSILLECTOMIES UNDER LOCAL ANESTHESIA.

Dr. Oscar Wilkinson, Washington, D. C.

The subject of tonsillectomy is an exceedingly interesting one, both to the general practitioner and the specialist. This is particularly true at the present time on account of the role that the infected tonsil plays in obscure general infections. The method of operation does not necessarily interest a general practitioner except insofar as it concerns the patient:—that is, facilitates his recovery and assures the best end result. The method of operation, however, is of greatest interest to the operator, both from his standpoint as to ease of execution and time saved in the work, as well as the interest of the patient during the operation, the recovery period, and last but not least, the final result.

Preparation of patient. In doing these operations the patients have had the following preparation: A laxative is ordered two days prior to the operation. It is our custom to give an aloin belladonna and strychnine pill or a saline laxative. The throat should be free of inflammation. The use of fifteen per cent alcoholic solution as a gargle is one of the best throat cleansing washes and is particularly advisable prior to these operations. I invariably operate in the morning as early as eight o'clock and the patient is given either no food at all or simply permitted to have a cup of coffee or some light liquid diet. Just before the operation the patient is given a hypodermic of one-half grain codeine sulphate with, in certain cases, one two-hundredth grain of atropine sulphate.

The anesthetic. I use first, locally, a six per cent solution of cocaine painted over each tonsil and into the tonsil crypts and then over the soft palate and pharynx. In sensitive subjects this latter prevents the tendency to gag which would interfere with the injection of the subsequent solution. I use as an injection a one per cent solution of alypin, or novocain or a one-tenth per cent cocaine solution, to which from five to eight drops of adrenalin have been added. Alypin and novocain are preferable to cocaine. About one-half cubic centimeter of the solution selected is injected into the anterior superior surface of the tonsil proper, when it is possible to get the solution to remain in the tissue. In friable tonsils, often the solution will not stay in the tonsil tissues. Unless the tonsil is bleached from the effects of the medicine you do not get anesthesia.

The next step of anesthesia is to place two or three drops just underneath the mucous membrane at the plica supratonsillaris. After this two or three drops should be placed under the mucous membrane in the middle posterior surface of the tonsil. A similar amount should then be placed at the middle anterior surface of the tonsil just under the mucous membrane, and a few drops should then be placed underneath the mucous membrane at the base of the tonsil. We next take a tonsil forceps and grasp the tonsil near its center and draw it forwards and inwards, thus showing the outline of the tonsil in its capsule. The needle is now passed through or beyond the superior portion of the tonsil back of the capsule and about ten drops are injected. Next, about the same amount is injected behind the tonsil at about its center and then back of the tonsil near its base. The same procedure is now carried out for anesthetizing the opposite tonsil. By the time the second tonsil has been injected the first one is ready for the operation. The entire amount of the solution used is generally from two to three drams.

Technique of the operation. The patient should be in a sitting posture, usually in a straight back chair with his head steadied by an assistant, who also holds down the tongue with the tongue depressor. In all cases, however, this is not necessary. The tonsil is grasped by a tonsil forceps. (I have found these, which I had made a number of years ago, very satisfactory.) The tonsil being grasped near its superior free border and drawn forwards and inwards, an incision is made through the mucous membrane *only*, along the superior, anterior and posterior borders of the tonsil, with a sharp knife with a double edge, slightly curved on the flat. This incision should never go through the capsule of the tonsil and it should be made as far forward and as near the tonsil tissue as possible. By doing this, the least possible sacrifice of tissue is secured, which is particularly to be desired: first, on account of less traumatism; second, on account of more rapid healing, and third, on account of less ultimate disfigurement. A second forceps is now used to grasp the superior portion of the tonsil at the margin of this incision. A dull knife is used simply to push back the mucous membrane until a more firm hold can be secured on the superior portion of the tonsil with its capsule. When this has been secured, the dull knife can be used simply to push the tissue away from the capsule, not by cutting strokes but simply by scraping back, as it were, the tissues, always bringing the force of this effort against the capsule. It is surprising to see how much soft tissue can be carelessly torn away from the loose cellular tissue posterior to the tonsil capsule.

In this part of the operation the object is simply to hug the capsule tightly so that when the operation is completed you have a smooth cavity which, from appearances, has a capsule lining the cavity from which the tonsil has been removed. In other words, one is almost persuaded that, in cases in which this has been properly done, there has been an *intra-capsular* operation. The tonsil is gradually pushed down on all sides until it is hanging loose in the throat, being detached from the anterior and posterior pillars with accuracy and precision, securing absolutely nothing with the tonsil itself except the tonsil in its capsule and the mucous membrane covering the anterior surface of the tonsil. When the tonsil lies loose in this position a snare with a small loop of No. 8 piano wire is made to encircle and cut off the lower portion of the tonsil and thus the operation is completed. The bleeding being controlled by pressure, hemostat or ligature, the other tonsil is now removed in the same manner. When both tonsils have been removed and the hemorrhage stopped, the cavities are painted with phenol and iodine solution, then compound tincture of benzoine and the patient sent to bed.

After-care of the patient. The patient is instructed not to attempt to clear the throat more than is absolutely necessary to prevent swallowing of blood. Those who complain of pain are given an ice pack around the neck, and some demand another injection of codeine or codeine by the mouth. In nervous subjects I have found that one or two doses of bromide of potash has a good effect. After four to six hours very few patients complain of pain of sufficient amount to demand any further anodine. In patients in whom the salivary glands are excessively active the use of atropine is sometimes indicated to dry up the secretions. For the next eight or ten days the throat is sore on swallowing and particularly on taking sour drinks or eating anything that is either too hot or too cold. Cleansing gargles are used and antiseptic applications are made from time to time until the patient is well.

The complications. Complications may be classified into two headings—those which may occur at the time of the operation and those which may occur after the operation. Complications at the time of the operation may be due to sickness from the anesthesia, fright on the part of the patient, or from hemorrhage preventing further operative procedure. Neither one of these complications has so interfered with us in these two hundred cases as to prevent the removal of both tonsils. We have had seven cases which required some attention, either on account of fright or the anesthetic, but none due to severe hemorrhage. Of these, in only one case was it necessary for the patient to lie down on account of feeling sick, and in this case by simply arranging the operating table and placing the gentleman on the table the operation was completed, and within a few minutes he was able to walk out of the room. He was a very nervous man who always had fainted at the sight of blood and had been for five years trying to muster enough courage to have his tonsils removed. It is a question whether his fainty condition, as he termed it, was due to fright or to the amount of cocaine used as a local anesthetic. Of the other cases, four were women of very nervous temperaments and one went to the operating-room saying she knew she could not stand the operation without ether. Their only symptoms were a fainty feeling associated with pallor. These regained their color as well as their courage after the administration of a teaspoonful of aromatic spirits of ammonia and bathing their faces in cold water, and all of them left the operating-room in a very much more cheerful condition than when they entered, having regained both their courage and their color. It is often a difficult matter to determine just how much of this partial collapse is due to fright and how much to the toxic effect of the anesthetic.

The after-complications consist of hemorrhages, peritonsillar abscess and neuralgia. Hemorrhages may be divided into primary and secondary. A hemorrhage within the first seventy hours may be considered primary. After this period they are usually termed secondary hemorrhages. In this series of two hundred cases we had four primary hemorrhages. Of this number it was necessary in only one case to ligate the bleeding vessel. We had three cases of secondary hemorrhages. Of this number in only one case was it necessary to sew up the tonsil cavity. In two cases in which I was called to see the patient on account of hemorrhage, it had stopped by the time I arrived and nothing was done further than to inspect the throat. In two cases of secondary hemorrhage it was necessary to use local astringents and simply place a piece of gauze with styptic solution in the tonsil cavity.

I had one case of peritonsillar abscess which occurred within eight days after the enucleantion of the tonsil. In this particular case the young lady wished to have her tonsils removed during her vacation. I had treated her ten days prior to this time for an acute follicular tonsillitis, and I insisted that it would be better to wait, but she was more insistent: hence I operated under protest and she protested afterwards. I had one other case of threatened peritonsillar abscess in a young lady who was operated under exactly similar conditions. She barely escaped peritonsillar abscess after a most vigorous aseptic treatment of her throat. After these two experiences, I would insist upon any patient waiting three weeks after tonsillitis before a tonsillectomy is done. There are three serious objections to operation upon a patient who has recently had tonsillitis. First, danger of after-infection; second, hemorrhage is always greater, and third, local anesthesia is never so complete in a throat that is inflamed.

The next complication is that of neuralgia in the throat. I had two cases of this character and, fortunately for the patients and the doctor, it is a most rare occurrence. However, I am inclined to think it often occurs when the operator knows nothing about it. The conditions of these two patients were very much the same. The symptoms were as follows: Within a few weeks after a perfectly performed operation and an otherwise successful result, the patient returns with a stinging, burning, lancinating pain at the lower anterior portion of the tonsil scar. This is due to the involvement of a tonsillar branch of the glossopharyngeal nerve in the tonsil scar. A branch of this nerve seems particularly apt to be so involved and cause this character of trouble. A possible injury to the main portion of the glossopharyngeal nerve might occur in this region. However, this did not occur in any of my cases. There was a report by Matthews of such cases last year in the *Journal of the American Medical Association*. When this does occur the patient suffers for a long time, if not indefinitely, from a severe drying of the throat and fatigue after singing or speaking. I had under my care last winter a young lady who had had an injury to both pharyngeal nerves during tonsillectomy and suffered intensely from a mucous discharge drying on the posterior pharynx.

Two hundred tonsillectomies under local anesthesia are not a great number of cases, but they are sufficient, when carefully considered, to justify some interesting conclusions:

First. The operation can be done without pain.

Second. Do not ever operate on a case which has had a recent acute tonsillitis.

Third. There is less shock, less hemorrhage and less fever under local anesthesia.

Fourth. The work can be more satisfactorily done and hemorrhage can be more easily controlled under local anesthesia.

Fifth. Many cases can thus be operated on who could not, on account of other conditions, take a general anesthetic.

Sixth. Local anesthesia is *the anesthetic* of choice in all grown subjects with very few exceptions.

1402 L Street.

OPERATIVE TECHNIC IN CIRCUMCISION OF THE TONSIL.

Dr. Frank G. Murphy, Mason City, Iowa.

Two and one-half years of experience with this operation has convinced the writer that the technic followed in its execution is of signal importance. That any operative procedure that has for its aim the disposal of the peritonsillar sinuses will meet with a fair degree of success is certain. With this in mind a more detailed description of the methods employed, than has been heretofore given, may be of help to those who have not attempted the operation, and who have not developed a technic of their own.

While the plica triangularis is as varied as the tonsil itself, the position is taken that in normal tonsils the plica has practically disappeared before birth and that the mucous glands of the faucial region rarely become infected when the plica has reduced to normal as has been shown in former communications.[1, 2]

It is of the greatest importance that adequate drainage be established in the peritonsillar fossae as the indications are that this is the source of our peritonsillar and systemic infections. It is also important to establish drainage of the tonsillar crypts as is shown in figure 4, when the palatal muscles are free to compress the tonsil at its base during deglutition. Where there is a persistent plica neither the tonsillar crypts nor the peritonsillar spaces drain normally. (Fig. 5.)

Drawings in Figure 1. These drawings illustrate a condition which at a glance would appear as if there were no tonsil at all. The tonsil is undeveloped or is in a condition of advanced atrophy and is entirely hidden by the plica that has retained its embryonic state and covers the greater part of the fauces. The white line diagonally across the plica in *drawing B* represents the dividing line between that portion of the plica that is adherent to the faucial wall below and the unattached part above that encloses the deep anterior faucial sinus. The black lines in C running parallel with the anterior pillar indicates that part of the plica removed by the U punch. The white dotted line indicates the removed attached plica below the white line and the unattached part of the plica above, all of which is removed by the Hartman punch. D shows the operation completed. The anterior fossa is no longer a culture tube for pathogenic bacteria that may infect the peritonsillar glands whose ducts open into this area. The lower portion of the plica that partly overlaps the tonsil is closely adherent to the faucial wall and to the lower border of the tonsil and covers no mucous ducts nor tonsillar crypts which makes its removal necessary.

Drawings in Figure 2. After the cotton-tipped probe has been dipped in a 10 per cent. cocaine and 1:1000 adrenalin solution it is applied to the inner surface of the plica from the base of the tongue upwards covering the inner side of all the plica to be removed as in A. The cotton-tipped probe is then inserted in the supratonsillar fossa and the anterior fossa as in B, which is enclosed by the plica triangularis, and from this point the probe is carried down to the bottom of the anterior fossa. The cotton-tipped probe at the bottom

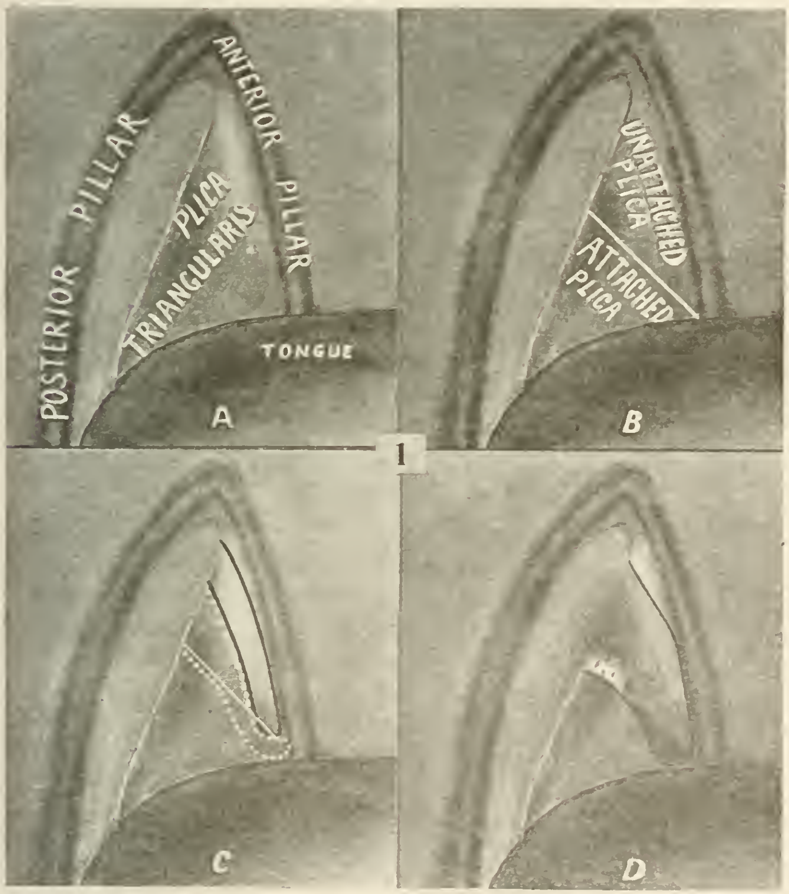

Fig. 1.

of the anterior fossa is in about the same position as it is in A, except that it is hidden by the plica. Usually there are no attachments in the supratonsillar fossa that require breaking down. The writer makes these applications to both sides of the plica every five minutes until from four to six applications have been made, when the field is ready for operation.

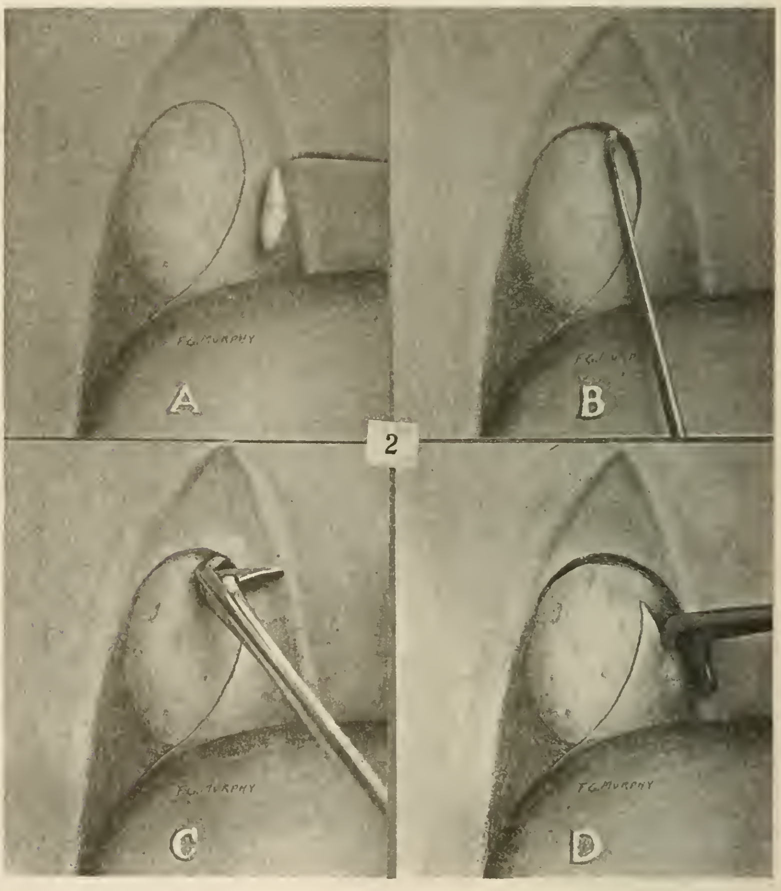

Fig. 2.

Starting with the U punch the writer thinks it is not usually necessary to remove much of the plica covering the supratonsillar fossa as that membrane rises when separated from its attachments, and sufficient drainage is established in that region. The incision by the U punch is carried forward and slightly downwards towards the anterior pillar as in C, and then to the bottom of the anterior fossa as in D. It is then neecssary to search with the blunt-hooked probe behind the anterior pillar to be sure no pockets or attachments remain.

Drawings in Figure 3. A represents the work of the U punch completed, the incision having been carried down parallel with the anterior pillar to the bottom of the anterior sinus. The anterior fossa does not usually reach to the base of the tongue; therefore, the remaining portion of the plica between the incision and the tongue is removed by the Hartman punch as in B. The writer thinks it is not necessary to always remove the plica as far as the base of the tongue except where the anterior faucial sinus is deep. In practically all cases, that portion of the plica that is adherent to the lower

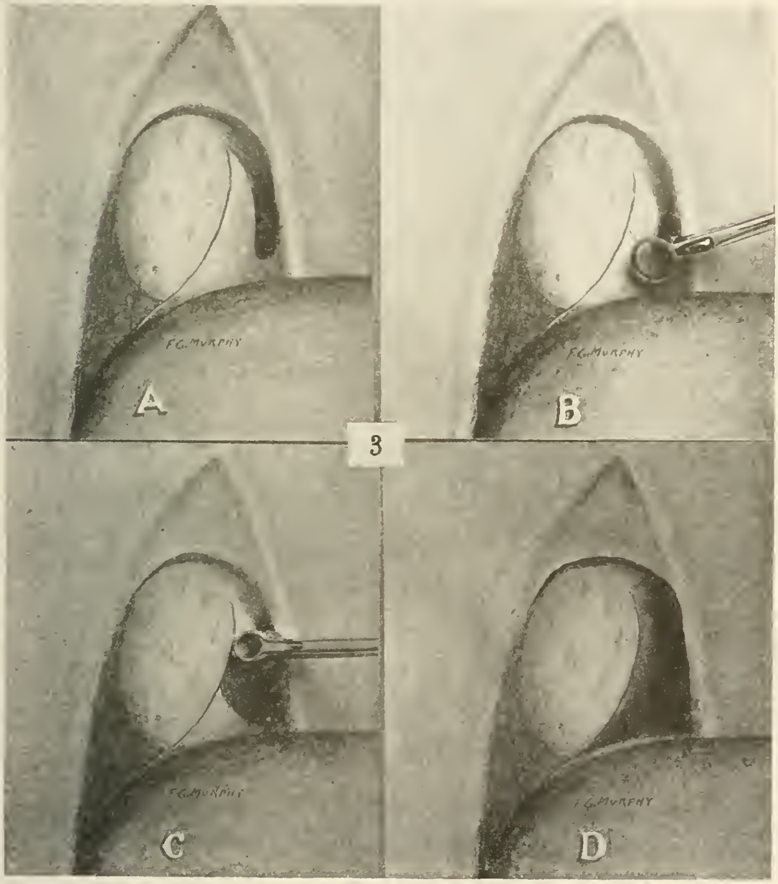

Fig. 3.

lobe of the tonsil is removed for about one-fourth inch below the bottom of the anterior fossa and also for the same distance posteriorly as in C. In C there is a triangular portion of the plica remaining on the tonsil inferiorly and above the base of the tongue that the writer does not always remove except when the lower lobe of the tonsil is considerably developed as in this illustration. That portion of the plica that is in evidence above the punch in C is unattached to the side of the tonsil and should be removed entirely regardless of how large it may happen to be. D shows the operation completed except that an application of a 25 per cent. tincture of iodine is now made to the field of operation.

4

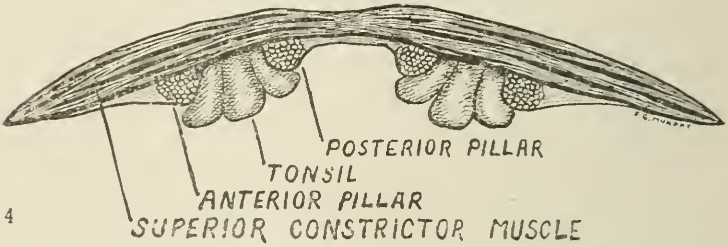

Fig. 4. Horizontal section of superior constrictor muscle and normal tonsils as in deglutition showing pillars constricting base of tonsils, milking the crypts. (Schematic.)

5

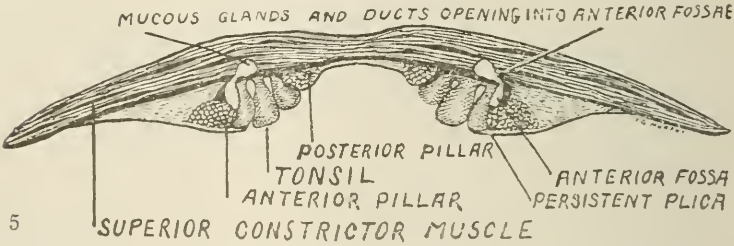
MUCOUS GLANDS AND DUCTS OPENING INTO ANTERIOR FOSSAE
POSTERIOR PILLAR
TONSIL
ANTERIOR PILLAR
SUPERIOR CONSTRICTOR MUSCLE
ANTERIOR FOSSA
PERSISTENT PLICA

Fig. 5. Horizontal section through superior constrictor muscle on line with center of tonsils, showing anterior pillars riding tonsils on account of persistent plicae. (Schematic.)

When it is not possible for the patient to report to the office for subsequent treatment, a half-ounce of the freshly made tincture of iodine is prescribed and the patient taught to apply it once daily for a few days. The patient is advised that frequent efforts to swallow is beneficial. It is best to have the patient report for inspection in a few weeks and should any attachments have formed that interfere with the drainage of the anterior fossa they should be broken down. However, if the work is carefully performed there is usually little annoyance with adhesions afterward. After a persistent plica has been removed the buried tonsil begins to present itself between the pillars which is particularly noticeable the first week or two following the operation. The plica having been removed the superior constrictor muscle meets with no resistance in its efforts to force the tonsil through the palatal arch and the tonsil that appeared to be small may now show itself to be of considerable size.

In the normal tonsil and in those where the circumscision operation has been properly carried out the tonsil should be easily forced between the pillars by the superior constrictor muscle when the patient retches or gags and during deglutition as in Figure 4.

When there is a persistent plica the anterior and superior fossae become culture beds for pathogenic bacteria which infect the mucous glands and the anterior pillars ride the tonsil in deglutition, preventing drainage of the crypts. (Fig. 5.)

As soon as the tonsil begins to function normally old epithelial plugs begin to work out from the deep crypts and occasionally cause a little annoyance to the patient until the mass has been forced through the mouth of the crypt. It is best to explain this to the patient that he nor his physician friends may not misinterpret this effort of the tonsil to function normally for a pathological condition.

Several laryngologists have written that they felt that no matter how successful this operation might be, the fact that the tonsil remained would furnish opportunity for unprincipalled physicians to discourage the patient and convince him that a proper operation had not been performed. The writer's experience has been that the physicians who do not operate on the tonsil and who are unbiased in their judgment are friendly to the operation and no difficulty is experienced in doing conscientious and thorough work for their patients. The physician who operates the tonsils of every patient who will permit him to do so regardless of the pathological conditions found is an enemy to this operation as he is invariably a menace to scientific medicine in general.

The writer has, upon the advice of Dr. Robert S. McCaughey, internest to the Park Hospital, enucleated the tonsils in every case when the improvement in the patient's systemic condition did not meet his expectations, after a thorough circumcision operation had previously been performed, and so ar no improvement ater tonsillectomy has been observed. It seems to me that this is the most reliable test to make in determining the efficiency of the operation.

The fact that bacteria of a virulent type may be found in the crypts of the tonsils after the circumcision operation, is no evidence that their toxins are entering the circulation or that the pathologic tonsil will not become normal, after proper drainage of the crypts has been established. While the writer has for more than two years been convinced that the peritonsillar theory of infection is correct, the technic of the operation has presented the usual difficulties.

The morphologic variations of the plica are so marked and the development or atrophy of the tonsil so diverse that the technic of each operation must vary to some extent. The tonsillar conditions presented in *Figures 1 and 5* in the communication "The Plica Triangularis and its Morphologic Variations," appearing in the May, 1917, number of THE LARYNGOSCOPE, have been selected as the two best types to describe this operation because of the unreduced plica and the variation in the development of the tonsils.

1. MURPHY, F. G.: N. Y. *Med. Jour.*, 1917, V. cv., p. 785:
2. MURPHY, F. G.: THE LARYNGOSCOPE, May, 1917, p. 409.

The Park Hospital.

Changes in the Central Nervous System in Hypothyroidism.

F. W. MOTT, *Brit. Med. Jour.*, Feb. 24, 1917.

There is a universal chromatolytic change in the cells of the central nervous sytsem, sparing no system or group of systems of neurons entirely. The changes had been especially noted in the smaller cells of the autonomic nuclei (vagus and glosso-pharyngeal, for example). The cells of the olivary body showed much less change and the Purkinje cells of the cerebellum less chromatolysis than the large motor cells of the medulla oblongata, spinal cord and Betz cells of the cortex, and there was no increase in neuroglia. The nervous symptoms in myxedema point to a condition of exhaustion of nervous energy, consequently, upon the assumption that the basophil substance of the nerve cell is the source of nervous energy we should expect the above findings, namely a marked chromatolysis as revealed in sections of the brain and spinal cord by a partial or complete disappearance of the Nissl granules throughout the central nervous system. The author corroborated these findings in seven cases. ED.

OZENA AMONG THE VARIOUS RACES OF THE EARTH.*

Dr. J. N. Roy, Montreal, Canada.

Through extensive travels during the last ten years the writer has had the opportunity of coming in contact with the principal peoples of the globe and thus being in a position to study on the spot anatomical, physiological and pathological conditions, believes it of interest to publish his observations and conclusions in regard to ozena. To escape repetitions, and especially to remain on purely scientific grounds, we shall divide the peoples of the earth, from an ethnical standpoint, into three large families: the white, the black and the yellow. Indeed, if we consider carefully the characteristics of the Malays and the Redskins, we find that the representatives of those two races have had the Mongolians for ancestors. The color of their skin, the shape of their eyelids, the development of their malar bones, the flattening of the base of their nose, the thickness of their hair, and generally speaking, their general facial expression, are all arguments in favor of our theory. Moreover, we find in the language of certain Indian tribes of South America a number of expressions very similar to certain Japanese words, and inscriptions and writings, undoubtedly vestiges of those which adorned the shrines of Boudha are also often found in Mexican ruins.

We shall have little to say about the white race, as such a large number of articles on ozena have already been published; we simply shall draw some conclusions from what we observed in cross-breeds of white with either of the other two races.

The blacks are particularly interesting, and a careful study of them in Africa, America and Oceania reveals some very instructive facts. In the course of an extensive voyage around the Dark Continent, we examined the nasal cavities of nearly five thousand negroes, in twenty-two different colonies. On several occasions we penetrated into the interior of the country, a long distance from the coast line, and were in a position to visit about a hundred different tribes. After making a most careful and minute examination of those aborigines of Africa, all over the country, we may state, considering the large number that came under our notice, that they do not suffer from ozena. We made a particular study of those races which are not full-blooded or pure, as the Mulattoes, the Moors of Mauretania of Arab and particularly of Berber descent, the Peuhls, the Foulahs, whose ancestors were the Egyptian Fellahs, the Hottentots and the Bushmen, in whose veins there is a certain quantity of Mongolian blood, the Danakils, Somalis and Gallas, of mixed Arab breed, and finally the Abyssinians who at various periods of their history were often in close contact with the Egyptians. All these peoples showed no signs of atrophic rhinitis. This disease is also unknown among the negroes we examined in Oceania and in the West Indies, and we had to return to the American continent to find it.

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*Read before the "Congrès français d'oto-rhino-laryngologie," Paris, May, 1914.

During our stay in Brazil, where three-quarters of the population is black, in Central America and in the United States, we were surprised to find a large number of cases. We discovered it in pure breeds as well as among the Mulattoes and the Zambis (the offspring of negroes and red-skins).

Our excellent confrères, Doctors Chardinal (of Rio de Janeiro) and Jones (of Newport News, Virginia) also found a number of blacks afflicted with ozena. Their findings show that the disease appears to be less prevalent among the negroes and mulattoes than among the white and yellow races, and we are entirely of that opinion. Their mucous membranes in general are very resistant to infection and it requires a prolonged contact with very virulent microbes to cause a disease.

The yellow race of Asia and its different ramifications which spread practically all over the globe are particularly predisposed to atrophic rhinitis. We found it not only in the Chinese and Japanese, but also in certain Indo-Chinese of Mongol cross-breed, in the Esquimos, the Laplanders, the Finlanders, the Malays, the Philippinos, the Hovas and the Redskins. The frequence of the disease varies according to certain conditions which we shall try to explain now in studying the causes of ozena among the different races.

Contrary to the opinion expressed by F. Fraenkel, Gottstein, Couetoux, Boulay and many other authors, who believe that ozena is preceded by a pre-atrophic hypertrophic rhinitis, we agree with Bosworth that such is not the case. We examined the Chinese in their own country, in tropical climes and in cold countries such as Canada in winter, and we did not find that climate was a factor in the frequency of the disease.

By studying a large number of cases we found, generally speaking, that Mongolians have a tendency to atrophy of the anterior third of the inferior turbinal without any pathological symptoms. This is particularly evident if they reside in a hot climate; and in colder countries we find they suffer from hypertrophic rhinitis, though not as often as whites. The Indians of the American continent are predisposed to that kind of atrophy, which is also found in a lesser degree in the cross-breeds. In none of the cases does the enlargement of the inferior turbinal seem to have any influence on ozena, the frequency of which varies according to the more or less contaminated surroundings. Moreover, the African negroes often suffer from hypertrophic rhinitis if they live in a cold, damp clime, though they do not show any lesions in their own country. We were astonished at the frequency with which we observed the deviation of the septum in the yellow race and especially in the Indians, among whom we found it in no less than forty per cent of all those we examined. This malformation is also more frequently found in the cross-breeds than in whites.

We scarcely ever found compensatory hypertrophic rhinitis in the largest side of the nasal cavities in the Mongolians; more often we observed the presence of a muco-purulent discharge with a crusty deposit devoid of odor. This corresponds to a state of pseudo-ozena. In cases of true ozena we found the odor weaker and less repulsive than in whites and blacks. We draw particular attention to this fact and believe it to be due to a physiological increase in the quantity of the nasal secretions proper to that race, which prevents the drying of pus and thus shortens the life of bacteria and partly prevents the formation of their toxines.

The deviation of the septum in the Mongolians, combined with the formation of non-ozenous mucosities in the much-expanded nasal cavities, is an argument against the theory expressed by Zaufal, who states that atrophic rhinitis is found in those individuals who possess very large nasal cavities, where the weakness of the air draughts allows stagnation and decomposition of the secretions. On the other hand, the negroes—scarcely ever showing any deviation or spurs of the septum—have the arch of their palate lower than in the white and yellow races, the nose flat and broad, with wide nostrils, and in Africa they do not suffer from ozena.

We shall not bring forward arguments to offset the theories of epithelial metaplasia sustained by Siebenmann or against Zarniko's theory of tropho-neurosis, or that of osteo-malacia of Cholewa, of primary infection of the sinus, as advanced by Vieussens-Grundwall; we shall simply repeat that there is no atrophic rhinitis to be found among the natives of the Dark Continent. The same may be said about tuberculosis which also exists in those countries.

The infection theory of ozena appears to be the only one which will satisfy every demand. We do not intend to discuss again, as it has already been done on several occasions, the value of the capsulated cocco-bacillus of Löwenberg, of the pseudo-diphtheric bacillus of Belfanti and Della Vedova, and of the small bacillus of Pes and Gradenigo. We believe the cocco-bacillus of Perez (of Buenos Ayres) is really the specific vehicle of the infection, since experiments conducted in the laboratories confirm and prove that theory. The cocco-bacillus when injected into the circulation of an animal is the only one which causes atrophic rhinitis with the characteristic odor of ozena. The other microbes found in the nasal cavities only act as secondary agents.

After examining in both Americas a multitude of Indians belonging to twenty-seven different races, and a large number of cross-breeds, we observed that local conditions and surroundings cause a more or less frequent appearance of the malady. Rare enough in those parts of the country where the natives live on high ground scattered in the open air, the disease is found much more frequently in the towns and on the plain where they live under more congested conditions and breathe impure and contaminated air. Among the latter we even found the disease in about six per cent of the population, and as the women are more confined to their homes and live in a more secluded manner than the men, they are more often infected. We observed the same conditions in Malasia, China and Japan.

Redskins and cross-breeds are equally infected by ozena; still, the yellow race appears to be more susceptible to the disease than the white. We believe the reason for this condition is to be found not only in the filth some of the Mongolian races are addicted to, but also to the want of symmetry in their nasal cavities. The deviation of the septum which we observed very often in them, naturally causes respiratory defects and a greater abundance of stagnant secretions than in the whites—with equal lesions—and the bacillus of Perez finds a field quite prepared for its culture and development.

In Madagascar, our excellent confrères, Dr. Fontoyront and Dr. Roton, were kind enough to show us some cases of true ozena among the Hovas. It is interesting to note that that race, which is of Malay descent with a slight mixture of Hindu blood, is the only one which shows any susceptibility to the infection, though they come in fairly intimate contact with the negroes who do not yet suffer from that disease.

That ozena is distinctly of microbic origin is most conclusively proved by observations in Africa. Of all the blacks we examined in that vast continent, not one was infected. Not even among the natives of mixed descent whose ancestors may perhaps have suffered from the disease which probably disappeared through the purifying agency of the sun's rays, in a sand-covered tropical region. And yet, when removed from the slave coast to Brazil—to an equatorial clime, similar to that of their own country—these negroes in contact with the infected aborigines, soon become infected themselves. When transplanted to the northern parts of South America, into Central America or to the United States, they brought the disease with them or contracted it in these countries. Their mulatto or Zambi descendants in turn were infected, and according to statistics, these blacks are more often contaminated than those of pure blood. This is probably due to their closer and more intimate connections with the white and yellow races, and also to the heredity of the diathesis of the later, which in a general manner reduces to a great extent their power of resistance.

It is thus very evident that the blacks are not immune to ozena, and it will be interesting to know how long Africa and Oceania will remain free from contamination, and particularly the West Indies, which would seem to be more exposed to the infection since they are inhabited to a great extent by mulattoes who often visit the American coast.

Now, if we are allowed to draw certain conclusions from the observations we collected from all quarters of the globe, we may say that ozena is an infectious disease and is found in all races. Yet, the disease is less frequent among the blacks than among the whites, and is most prevalent among the yellow race. The marked deviation of the septum on these latter, to which we must add their state of habitual uncleanliness and nasal irritation, produce in their mucous membrane a splendid breeding-ground for the microbes.

The blacks of Africa, Oceania and the West Indies are not yet infected, although they are susceptible to the disease and the small number of Europeans who came under our notice—and they were not afflicted with ozena—does not allow us to express an opinion as to the future appearance of the disease in those countries.

277 Rue St. Denis.

AN UNUSUALLY LARGE POLYPUS OF THE ETHMOID.*

Dr. Henry B. Orton, Newark, N. J.

The unusually large size of this nasal polypus originating in the anterior ethmoid cells and completely filling up the left nasal cavity and not extending into the nasopharynx I think warrants reporting this case.

J. D., 61 years, white, male, married, came to my office Nov. 23, 1916, complaining of his inability to breathe through his nose, which necessitated his sitting in the upright position at night to enable him to get air. He has had an occasional headache and a purulent discharge from the left nostril.

His family and personal histories are negative, except that he had some polypi removed from his left nostril twenty years ago.

On examination I found a deviated septum with its convexity toward the right; left nostril occluded by the mass. A chronic epi- and granular pharyngitis with an hypertrophied and slightly edematous uvula. Transillumination was negative.

On post-rhinoscopic examination the posterior end of this mass could be seen occluding the entire left choanal opening. On dilating the left nares anteriorally I was able to trace the attachment of this growth, by means of a probe, with a certain degree of proximity to the anterior ethmoid cells.

Under cocain anesthesia a cold wire snare was placed over this mass, getting as much as possible within the loop before tightening the snare. The idea was to remove as much as possible so as to give more subsequent space not thinking for a moment that I would be able to evulse the entire mass at once.

However, to make sure that the snare would not slip, gentle traction was made. There was a sudden cracking sound. The patient exclaimed that I was pulling his eye out. The mass was removed and measured four inches long, one and one-half inches wide posteriorally, one and one-half inches wide anteriorally and one inch in thickness. In the center (A) is the point of attachment to the anterior ethmoid region, showing clearly a few of the cells. There was quite a profuse momentary hemorrhage which ceased in a few moments of its own accord without even packing.

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*Reported to the Nose and Throat Section of the Academy of Medicine of Northern New Jersey, December, 1916.

On inspecting the nasal cavity afterwards the left middle turbinate was absent, either removed at the previous operation twenty years ago or it had disappeared by absorption. A number of the anterior ethmoid cells were open.

There were no other polypi anywhere to be seen. The whole mass was removed in toto. The growth looked very much like adenoid tissue and I thought possibly it might have been a polypo-adenoma.

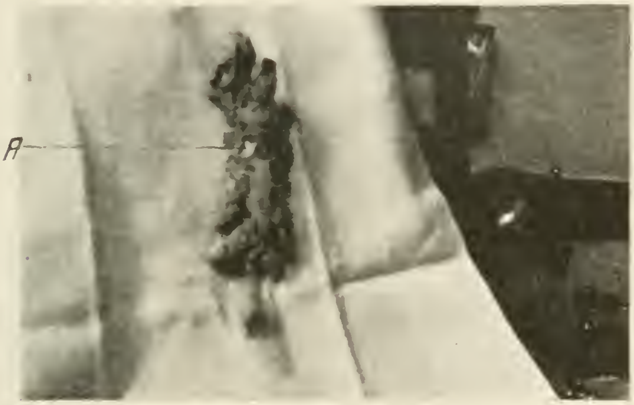

Fig. 1.

The report from the pathologists stated that the growth from the ethmoid shows it to be a polypus with edematous and inflammatory products, showing no malignancy.

The accompanying picture gives a fair idea of the contour of the growth, it being the largest entirely nasal polypus I have ever seen. The man made an uninterrupted recovery.

671 Broad Street.

Acute Exophthamos in Quincke's Disease. Meyer Heurlimann, *Correspond.-Blatt f. Schweizer Aerzte*, Feb. 10, 1917.

Patient a woman 51 years old. Disease characterized by acute circumscribed swelling of the face, ear, leg, soft palate and pharynx, edema of larynx, sudden starting and ceasing diarrhea, and great exophthalmos first of one and then of the other eye. There was no fever. The attacks were recurrent, each lasting from one to fourteen days. General condition not much affected. Ed.

A CASE OF TRAUMATIC APHONIA,

Dr. Thomas A. Cheatham, Birmingham, Ala.

On Jan. 19, 1917, Mrs. A., age 21, a telephone operator, suffered from a neuralgic pain of increasing severity in the region of the larynx. Suddenly her voice failed and she found it impossible to even whisper. There was no preceding hoarseness or "brassiness." Dr. D. C. Donald was consulted and as there was some dyspnea, the patient was sent home and put to bed. The condition became progressively worse and the writer was called in consultation that night.

Examination revealed moderate edema of the glottis and epiglottis, mild hyperemia of the vocal cords, the usual tendency to spasm occasioned by examination without an anesthetic but nothing severe enough to account for the then existing severe pain, marked dyspnea and moderate shock. A local application of argyrol was made and a cathartic prescribed.

The following day dyspnea became alarming and the patient could not breathe in any but the sitting position. Examination revealed practically the same condition as when first seen.

On the second day, after a sleepless night, the patient vomited a half pint of dark brown blood and, feeling something sticking in the back of her throat, indicated this to her sister, who investigated and extracted from the soft tissues of the pharynx, a needle two inches long. The patient could not account for the presence of the needle. Dyspnea and a severe griping pain in the epigastrium immediately became so alarming that surgical intervention was seriously considered and the patient sent to the hospital at once.

Here an x-ray was made and no other foreign body found. The patient became progressively worse and for two days it seemed, at times, impossible to avoid an intubation or laryngotomy; however, by the use of morphia gr. 1/8, hyoscine gr. 1/200 and apomorphia gr. 1/40 at four-hour intervals, the patient would relax and breathe easier just when a radical procedure seemed imperative.

On the sixth day the patient, on awaking, though still suffering from pain in the epigastrium, could speak and suffered less from dyspnea; could speak distinctly on the seventh day and was sent home on the ninth. A week later she returned to her work and complained only of mild epigastric pains.

As there was no history obtainable concerning the needle, there was no way to account for the severity of the symptoms before the second day when the needle was vomited. A diagnosis was not attempted. The patient was a well-nourished, sensible, good-natured woman, devoid of any tendency to hysteria or "nerves." A Wassermann was negative. This, together with the sudden onset seemed sufficient to exclude aphasia.

My conclusions are that the needle had been swallowed several days previously, unnoticed by a mentally preoccupied and very busy "Central;" had remained in a harmless, lengthwise position for a while then, during a cough or while swallowing, had penetrated the pharyngeal mucosa making, probably, many puncture wounds, causing marked irritation which could account for the preliminary pain, then finally penetrating to and puncturing or severing the recurrent laryngeal nerve causing sudden loss of function in the vocal cords. The severe griping pains in the epigastrium and vomiting of blood may be accounted for by the presumption that the needle became dislodged from the laryngo-esophageal site and passed on to the stomach, causing more puncture wounds and consequent bleeding followed by reflex vomiting and the expulsion of the foreign body. That the gastric walls were not only irritated but injured is evidenced by the fact that dark brown blood was vomited on several succeeding occasions and the stomach refused to retain food until the eighth day. Epigastric pain was the most persistent of all symptoms.

At no time did the patient have a rise of temperature or show signs of pulmonary involvement although the x-ray showed distinct cicatrices of pre-existing chronic pulmonary lesions involving all lobes but most marked at the apices.

234-235 First National Bank Bldg.

Simple Ulcer of the Esophagus. J. B. Christopherson, *Lancet,* March 10, 1917.

The patient was a man 36 years old who died of hemorrhage from the esophageal ulcer perforating into the arch of the aorta. Necropsy showed two other ulcers both situated in the cardiac end, one of which had already healed by cicatrization and the other, a larger one, in the process of healing. Ed.

THE CONTROL OF BLEEDING IN TONSILLECTOMY.

Dr. William Dwyer, Hartford, Conn.

All other factors being equal, the amount of bleeding during the removal of tonsils decreases as the depth of anesthesia (general) increases. This is due to the fact that during a very light anesthesia, the patient frequently gags and retches—massaging the blood out of the cut vessels. As the stage of anesthesia is deepened the above factors disappear. The contraction of the muscles during swallowing works in the same way and gives increased flow of blood from points already bleeding, or starts up new ones.

An appreciable amount of blood may be saved for the patient by having him fairly well under the anesthetic before beginning the operation. A light anesthesia gives the patient less shock than a deep one, but the increased loss of blood offsets any gain from a smaller amount of ether. It is not intended to convey the idea that a very deep stage of etherization should be employed—rather one where the gagging, retching and swallowing are just lost.

With the Sluder method I have had more bleeding than with dissecting. This I have thought to be due to increased tendency to clotting being caused by the slight traumatism to the surrounding tissues in dissecting. This traumatism is absent in removal by the Sluder method.

The use of suction during the operation is a great advantage. It prevents the blood being swallowed or inspired and gives a clear view of the field of operation. The suction should not be applied directly to the tonsillar fossa as it obviously will result in increased bleeding. A clear field may be obtained by using suction at the postpharyngeal wall and the margins of the pillars. All blood in the fossa itself should be removed by gauze sponges, held in sponge forceps, care being taken to merely touch the spot in question and then withdraw. Wiping or twisting the sponge around on this point will increase the bleeding.

The majority of bleeding-points can be controlled by making pressure with one of the gauze sponges, pressure only slightly greater than the patient's blood pressure being all that is required. This may take from a few seconds to a couple of minutes.

Adrenalin applied to the sponges will give quicker and more complete results at the time, but, after the effect of the adrenalin has worn off, bleeding will return in a certain number of cases—sometimes after a patient has been returned to his room. Therefore, although it takes a little longer during the operation, it is better to use dry sponges.

When pressure applied for a short time does not stop the bleeding, it is best to tie the bleeding vessel. Ligatures work well, but are hard to place and may slip off afterwards. With practice it is not hard to suture the bleeding-points. No special instruments are required, simply a flat-jawed needle forceps, some full-curved needles and a Carmalt clamp. Number zero iodin catgut does very well for the suture material. Eighteen inches is a convenient length. It saves time to have a needle threaded on each end of the suture material.

To tie the bleeding-point, retract the anterior pillar and sponge in order to locate the exact point. Catch it with a Carmalt clamp including just as small an amount of tissue as possible. Then, with a small, full-curved needle held in a needle forceps and threaded with the iodin catgut, take a stitch just above the clamp, but as near the points as possible, introducing the needle anterio-posteriorly. If slight traction is made with the Carmalt clamp while introducing the needle, the tissues will be tented outwards, towards the center of the throat and it will be possible to include only a minimum amount. Now, taking the needle on the other end of the suture, make a similar stitch below the clamp, towards the tongue, again going anterio-posteriorly. The clamp is now removed to give more room in tying. When it is tied you have a purse string around the point in question and bleeding from that point will be impossible. If care is taken not to include too much tissue, there is no distortion. It is unnecessary to remove the sutures as they are absorbed in a few days.

It is very important to make traction on the Carmalt clamp while introducing the needle each time. It should be just sufficient to tent the tissues slightly. This lets the point of the needle escape instead of following around to the edge of the posterior pillar.

The position of the needle in the needleholder is also important. The flat plane of the needle should coincide with the flat plane between the jaws. The needle should be grasped near the eye and with the line between the eye and the point parallel to the line of the axis of the needleholder.

Familiarity in placing sutures can easily be acquired and then bleeding-points can be controlled much quicker and more efficiently than by pressure. All bleeding should be stopped before the patient leaves the operating table. Even slight oozing may persist and, if it continues long enough, result in serious loss of blood.

On the return from the operating-room and during the first few hours afterwards, the patient should be lying face downwards, or rather, on his abdomen with face sideways. No pillow should be used. Then, if any oozing occurs, the blood will run out onto the sheet and show at once. On the other hand, if the patient is lying on his back, he may start bleeding, but quietly swallow the blood, and the first sign may be the vomiting of a great quantity of blood or the rapid pulse, pallor and other signs of severe hemorrhage.

Occasionally, in spite of all precautions, hemorrhage will occur after the operation. If the main points have been sutured and the patient left the table dry, the bleeding can be controlled by pressure with a gauze sponge for a couple of minutes. Inspection of the throat will show a clot in the fossa which is bleeding. This should be removed before any attempt is made to stop the bleeding. It should be picked out with an artery forceps, and, when the fossa is clean, the pressure made.

In a very few cases there will seem to be a general oozing. Then a gauze sponge inserted between the pillars and held in by a couple of sutures through the edges of the pillars will control it. The sponge should be left in for twenty-four hours. When there is persistent oozing, examination of the blood may show prolonged bleeding time. If this is found to be the trouble, calcium salts by mouth or whole blood injected into the buttocks or even transfusion is indicated. The history taken before operation will exclude "bleeders."

When bleeding is present after the patient is returned to his bed, differentiation between adenoid and tonsillar bleeding is quickly made by having the patient lie face downwards. Adenoid bleeding will result in blood coming from the nostrils; tonsillar from the mouth.

Adenoid bleeding. After removing the adenoids, rubbing the naso-pharynx with gauze wet with alcohol will remove any small tags. Then pack gauze into the naso-pharynx with the fingers. This, if left in for a couple of minutes, will materially reduce the amount of blood which would otherwise be lost. Care must be taken not to make undue pressure on the soft palate during the packing, or some distortion will result, lasting for a few days. Suction is used to remove any blood which enters the throat. Bleeding from the adenoid region after leaving the operating room is best stopped by a post-nasal pack, which is kept in for an hour or so. If bleeding is still present, the pack should be re-introduced and left in for twenty-four hours.

18 Asylum Street.

THE LINGUAL TONSIL: GENERAL CONSIDERATION AND ITS NEGLECT.*

DR. HERMAN B. COHEN, Philadelphia, Pa.

I hesitate considerably in reviewing this subject with you and I hope you may not think that it is with any presumptuous idea of teaching you anything. It is rather to bring strongly before you this apparently unimportant structure in its influence, association and causation in many of the symptoms complained of by patients with throat trouble.

It is one of those structures that is not seen by direct inspection but requires the aid of the laryngeal mirror and unless a point is made to examine this organ many cases will remain unimproved or unrelieved of their symptoms. Before reciting the synopsis of several cases, I will delve but lightly into the general consideration of this tonsil, known as the fourth member of the pharyngeal ring or the connecting member of the so-called Waldeyer's ring.

Anatomy and embryology. The lingual tonsil is not as confining as the faucial tonsil and is situated antero-posteriorly from the circumvallate papillae to the epiglottis on the base of the tongue, projecting backward so that when the structure is enlarged it may touch the tip of the epiglottis. On either side they are in close proximity to the inferior poles of the faucial tonsils. The tonsil consists of lymphoid nodules commonly arranged in groups of two or three nodules, prominent and contiguous, extending laterally from either side of the central line, making what might be termed a right and left lobe. This central line is known as the glosso-epiglottic ligament. The number of nodules vary, as shown by Ostman, from 34 to 102, averaging 66. The size varies from one-half to six millimeters. They rest on a basement membrane of fibrous tissue analogous to the capsule of the faucial tonsils; but never so compact or so developed as that tissue. A lateral section shows the nodules as discrete hemispheres, the mucosa at the bottom of the meager intervals between them being free from lymphoid tissue, each presenting two or three crypts. The epithelium is like that of the faucial tonsils, stratified and squamous; the lymphoid tissue differs in no way from that of the faucial tonsils. Its arterial supply is from the dorsal lingual branch of the lingual artery. The veins which are an important part in the practical consideration, are part of the plexus draining the tongue. The dorsal veins form a submucous plexus on the back of the tongue and above the larynx and joining those of the pharynx and faucial tonsils. The lymphatic drainage joins a multitude of pores throughout the tongue and empties into the supra-hyoid glands and the submaxillary and deep cervical glands. Situated in the posterior third of the tongue, it receives its common sensation fibers from the glossopharyngeal and superior laryngeal of the vagus.

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*Read before the Logan Medical Association, March 16, 1917.

We are indebted to the research work of Wyatt, Wingrave and Rosenberg for the careful and detailed accounts of the developmental origin of the tongue. They found that the two portions of the tongue have different origins, the sulcus terminalis being taken as the division between the oro-glossus and pharyngo-glossus. The part behind the pharyngo-glossus contains the lingual tonsil. This difference of origin, though the two parts are in immediate connection, explains why the anterior portion differs completely from the posterior portion anatomically, physiologically and pathologically. According to Piersol, the development of this tonsil occurs in the last two months of fetal life, the faucial *anlage* appearing at the fourth fetal month. This is corroborated by Bickel, who further states that the lingual tonsil is the last to undergo atrophy as the child ripens into womanhood or manhood.

Physiology. Being similar in structure, we must assume a similar function to the lingual tonsil as to the other lymphoid glands. To act as a filter for the afferent lymph current and the production of lymphocytes are its functions. Its chief function, therefore, is one of protection similar to that of its neighbors. A similar indictment may be decreed upon the lingual tonsils as upon diseased and hypertrophied faucial and pharyngeal tonsils, namely, that they are only protective agents and normal anatomically when free of disease. G. Lewis, in 1863, was the first to call attention to the clinical aspect of the subject, though Betz, in 1879, was awarded this credit.

Diseases. The diseases of the lingual tonsil are similar to those of the faucial tonsil but usually of milder form.

Acute catarrhal inflammation (acute lingual tontillitis). This condition is the same as in the faucial tonsils and often accompanies the latter.

Chronic retention in the crypts rarely occurs, as can be understood by the free and open drainage; therefore, from the point of view of systemic infection the lingual tonsils are not as important as the other members of the tonsillar group.

Hyperkeratosis frequently occurs with symptoms of pain resulting from contact.

Abscess formation beneath the capsule occurs and is therefore similar to peritonsillar abscess.

Acute edema is seen in acute anginas and associated with laryngeal edema.

Mycosis; leprosy; tuberculosis; lues; varicose veins and *hypertrophy* are other conditions which may affect the lingual tonsil.

I mentioned varicosity and hypertrophic conditions last because they are by far the commoner affections and I wish to dwell a little more on these conditions.

Varicosities consist of dilated and tortuous veins arranged in an irregular fanlike shape over the base of the tongue. According to Vernuil, superficial varices only make their appearance when the deep varices have acquired a certain development. According to Escat, who fathered the above fact, "Many kinds of neuralgias otherwise inexplicable, are to-day attributed to circulatory troubles in the satellite veins of the nerves and to a consecutive neuritis." Quenu has thus explained certain neuralgias. The trunk of the lingual nerve, the evident seat of glossodynia, is in effect, according to Fourcher, accompanied by a satellite vein and according to Zuckerkandl, even by two such veins. This anatomical fact is held by Escat to support this hypothesis and that of Piotrawski that all neuroses in this situation may be attributed to superficial and deep varices. Varix is a frequent accompaniment of hypertrophy and is a true manifestation of a disturbance of the circulation. Infectious inflammation of the pharynx and faucial tonsils and infection of the lymphoid tissue of the lingual tonsil are additional etiological factors. Browne believes that a constitutional or acquired debility of the vasomotor system is the chief cause. Some cases are reported as occurring at the menopause. Other etiological factors are constipation, hepatic cirrhosis and chronic intestinal disturbance. Do these apparent causes of varix of the lingual tonsil prove a disturbance of the circulation to be the underlying factor? May I emphasize what has already been suggested, the resemblance or the analogue between varix of the tongue and rector hemorrhoids?

Symptoms. The symptoms of the two conditions are practically alike with a few special symptoms depending upon the degree of hypertrophy and varicosity, also upon the underlying cause. I shall not attempt to divide them into groups such as local and reflex, as several of the symptoms are the result of a vicious circle.

The symptoms in the order in which they are more often complained of, are: cough, foreign body sensation, paresthesia, voice changes, hemorrhage and respiratory distress. In inflammatory conditions there is constant pain at the root of the tongue, irritation of the structures at the entrance of the larynx giving rise to frequent coughing. There is also pain on swallowing referred to the base of the tongue and region of the hyoid bone. You will recall from the earlier part of the paper that the reason for this would be the lymphatic drainage in that direction. The glands are swollen and red and specks of lacunar exudation are present. Abscess may result following this condition but it is rather rare. Lingual quinzy, if this term may be used, is less common than faucial, but when it occurs edema of the glottis is also present. I shall later quote you a case of this condition. Hemorrhage is a frequent symptom of varix. It is rarely profuse but is sometimes present on arising in the morning. With each succeeding hemorrhage the varicose condition is increased and thus a vicious circle is established. Hemorrhage from here does not produce anemia, but Dickson lays important stress on hemorrhage in this region and considers it of diagnostic importance in hemorrhagic lesions of the brain and sometimes in cardiac weakness. As a reflex symptom cough and foreign body sensation may be mentioned. Symptoms of glossodynia or even imaginary ulcer of the tongue may result. Loss of taste may follow from a fibroid change of the lingual tonsil.

The neurotic element is highly demonstrated in those individuals. The slightest depression or exhaustion of the nervous system will bring forth the symptoms prominently which are otherwise not manifest in those patients whose nervous organism is well balanced. Globus hystericus is frequently due to some lesion of the lingual tonsil. Paresthesia may vary and may even approach a state of hysteria. Dynspnea is more often due to nervous stimulation than to actual obstruction. Cases where the tip of the epiglottis has been imbedded into the linguas mass have been reported. Hhy therefore, cannot attacks of asthma be brought about by disease of the lingual tonsil? As a matter of fact, Casadesus reported a case of nocturnal asthma cured by the cautery applied to the lingual tonsil. Severe paroxysmal dyspnea has frequently been cured by local treatment. Diseased lingual tonsillar tissue is a dominating factor in the etiology of recurrent colds. The barking cough of puberty is a frequent occurrence due to slight enlargement of this tonsil. The cough is hard, sharp, metallic, ineffectual, and without other respiratory lesions and is not relieved by the usual remedies. This constant, irritating cough is sufficient to cause impairment of health and give our patient great mental anxiety from his belief that he has tuberculosis. Twenty to twenty-five per cent of the pathological changes in the lingual tonsil occur in professional voice users (clergymen, lawyers, school teachers, stock brokers, auctioneers, singers, etc.) The symptoms will vary if the condition is present in the basso voice; the voice will be less impaired than if present in the soprano voice, where the epiglottis is more erect and less apt to come in contact with the diseased lingual tonsil.

Of the tumors in this region or those arising from the lingual tonsil there are fibroma, papilloma, angioma, cysts and lipoma. Accessory and aberrant thyroids in this region have aloso been reported. When an accessory thyroid is present it may be mistaken for hypertrophy of one of the lingual nodules but the thyroid is then centrally situated at the site of the foramen cecum and is different in appearance from the lingual tonsil.

A malignant growth may make its seat in the lingual tonsil, though rarely as a primary growth as compared with the faucial tonsil.

The acute infectious diseases in childhood and especially those associated with throat lesions (diphtheria, scarlet fever, influenza and whooping cough) play an important part as predisposing influences in the production of hyperplasia of this gland.. Grippe or influenza shows a special predilection for the mucosa of the upper air passages.

Syphilis produces hypertrophy as does also bronchitis. Tuberculosis may be present as an associated condition of the diseased lingual tonsil or it may appear as a primary lesion.

Hypertrophy or marked hyperplasia occurs in middle or adult life but is seldom seen in children. The youngest case on record is reported by Hickman of a child who died of asphyxia at birth. Autopsy showed that death was caused by the enormous hypertrophy of the lingual tonsil. McBride reports a case of a child seven years of age. Oppenheimer's report shows that 20 per cent of the hyperplasia cases under his care seeking relief were between 30 and 40 years of age. Lennox-Browne of London found hypertrophy and varix more frequent between 25 and 40 years of age. Clark thinks hypertrophy is more common between 18 and 35 years while Johnson of Coffeyville, Kansas, found hypertrophy between 30 and 45 years of age.

As to sex, practically all men have found the hypertrophy to be more common in the female. Varicose conditions have been found by Phillips to be more common in the male sex. I should like to call attention to what might be called a coincidence, namely that neuropathic reactions are more often expressed by females. Therefore this factor will help make the number larger as they are more apt to seek relief.

Earlier in my paper I referred to the etiology of hypertrophy of the lingual tonsil. Ballenger, in his text-book, states: "It is probably caused by repeated or continued infection of the lymph structures of the pharynx, fauces and pharyngeal tonsils. I should like to broaden this statement and add, that the repeated or continued infection may come from two sources: Infectious and constitutional diseases; from repeated contact of surrounding structures and the intake of irritating foodstuffs, acids and gases. To substantiate the latter remarks, we find many cases of hypertrophy of the lingual tonsil in people who are fond of condiments, excessive hot and cold foods, alcoholics, etc. These all have an irritating effect and help to keep up the pathological condition, at the same time aggravating the symptoms already present. Another point: In hypertrophy without symptoms the lingual tonsil may at the menstrual period become congested to such an extent as to give rise to all the symptoms of dysmenorrhea. I shall later quote a case bearing out this point. Ellel reports a case where the cough and other symptoms complained of were absent between the menstrual periods. What can we conclude from this fact? May I suggest that in pregnancy where the persistent cough cannot be explained it would be well to always look for hypertrophy of the lingual tonsil.

Treatment. The general treatment consists in the removal of alcoholics, tobacco and irritating or hot foods. Tonic treatment alone is of little use and should not be depended upon. Sajous was accustomed to give small amounts of potassium iodide and mercury even in non-specific cases and has found the treatment of considerable help.

Locally the following may be tried: *For varix,* adrenalin, cocaine or eucaine, silver nitrate in varied strengths from 12½ to 25 per cent. Stronger solutions should be avoided. This drug or the cautery should be tried in slight hypertrophic conditions. Menthol in olive oil, 15 grains to the ounce, or glycerotannin should also be tried and are of considerable value. Other agents are trichloracetic acid, chromic acid beaded on a probe and passed over the tissue. Two mixtures that I have used and am fond of, both for hypertrophic faucial as well as hypertrophic lingual tonsils are: (1) *Glycerole of iodin.* Iodin, grs. 12 to 16; potassium iodide grs. 24 to 32; glycerin, one ounce. (2) *Tincture of iodine* one drachm to the ounce of glycerotannin. These mixtures are not original but I have good results from them, especially with the latter mixture.

After a course of treatment two or preferably three times weekly, for about three weeks, with little or no improvement, we should consider the operative means. A large pair of curved scissors may be used but I do not consider these as satisfactory, at least in my hands, as the lingual tonsillotome. When operating for the removal of the lingual tonsil, the same rule applies as in the operation for the removal of the faucial tonsil. That of course is the complete removal, as far as is possible, of all lymphatic and teat-like projections. When a few are left remaining especially in the median line, they are apt to keep up a local irritation and set up or retain the previous reflex cough.

For varicose conditions associated with hypertrophy, the hypertrophied tissue may be removed by scissors or by tonsillotome. Even better in such cases would be the galvano-cautery.

For after-treatment I have followed what Ballenger suggests, viz., massaging the wound with a cotton applicator dipped in a mixture of equal parts of glycerin, tincture of iodin and tincture of chloride of iron at intervals of twenty-four hours.

For abscess formation at the base of the tongue involving the lingual tonsil, the treatment, of course, is free incision, followed by hot alkaline gargles.

For acute edema numerous scarifications preceded by cocaine and adrenalin locally.

For acute catarrhal lingual tonsillitis and mycosis, local applications of 12½ to 25 per cent of silver nitrate.

Let me now cite you a few cases with what I call typical symptoms which should make an examination of the lingual tonsil a necessity, if the physician desires to do justice to himself and to his patient.

Case 689. (M. C. Hosp.) Hypertrophy of the lingual tonsil. Symptoms as given by patient: "Something in the throat which will not come up or go down. Belching of gas during which act the throat seems to close up."

Case 1804. (M. C. Hosp.) Complained of irritation of the throat with hoarseness at times. Also dry throat and frequent colds.

Case 2290. (M. C. Hosp.) M. O. M. Hysterical aphonia with hyperemic and hypertrophied lingual tonsil. Symptoms: After talking a few minutes she feels lumps in the throat followed by aphonia. No dysphagia; some phlegm in throat. The patient is of nervous temperament.

Case 3411. (M. C. Hosp.) M. L., male 28; knitter. *Diagnosis:* Hypertrophy of lingual tonsil. *History:* Sensation of something in the throat which makes him cough in order to get it out. Voice occasionally becomes thickened; states there is a good deal of impairment in speech.

Case 3511. (M. C. Hosp.) S. J., female, 40. *Diagnosis:* Hypertrophy of faucial and lingual tonsils. *Brief history:* Rawness in the throat especially at night. Feels as though there is a fishbone in the throat. Patient gave no history of eating fish. Has a croupy cough.

Case 2999. (M. C. Hosp.) H. B., 32, female, stenographer. *Diagnosis:* Hypertrophy of lingual tonsil. *History:* Subject to attacks of sore throat, the last attack lasting two months; slight cough; but is annoyed by the necessity of hawking up of phlegm and occasionally of blood. The condition seemed to be worse during the menstrual flow. In this latter case I did not think the condition of the lingual tonsil was sufficient to give the patient the symptoms she complained of and so I called upon Dr. Ridpath to examine the patient. He advised removal of patient's lingual tonsil. I followed his advice and the patient in a few days was rid of her trouble. This is the case that also had dysmenorrhea associated with the lingual tonsil trouble. It is as a result of this case that I took up this subject in detail and have attempted to give my findings in this paper.

Case 289. (P.) E. D., male, 43, baker, gave the following history: Previous to his call to see me, the patient, three months ago had his faucial tonsils removed for the following symptoms: Fullness in the throat, tickling sensation and the necessity of hawking to clear his throat of mucus and phlegm. Examination revealed a massive symmetrical enlargement of the lingual tonsil, The tip of the epiglottis was virtually sticking into the furrows of the lingual tonsil. The result in short of removal of this tonsil was that the patient is entirely free of all the symptoms previously complained of in relation to his throat.

Case 2044. (J. H.) *History in brief:* Sore throat for six years so annoying as to keep the patient awake many nights, constant desire to clear the throat. Examination revealed a marked varicosity and on further questioning I found that she has been a sufferer of some circulatory disturbance. I have treated her twice weekly, applying silver nitrate. The reply at her last visit was "she cannot express what a relief it was to have a good night's sleep." The patient has some nasal affection which prevents perfect breathing and will have to be cleared up before she is entirely cured. I could go on citing many cases but all will give practically the same symptomatology.

Earlier in my paper I mentioned a case of lingual abscess with edema of the epiglottis—another case which we were able to give quick relief, the condition having been overlooked by the family physician.

Case 3311. (M. C. Hosp.) G. M., male, 32; moulder. Had an attack of tonsillitis ten days before I saw him. First the left and then the right tonsil became affected. He was directed to use gargles but received no benefit from their use. He noticed that he began to have painful dysphagia. After another visit to the family physician he was directed to continue the use of the gargle but with no relief. On examination the patient remarked to me that the condition annoyed him so much that he was tempted to end his life. Examination revealed an inflamed and swollen posterior portion of the tongue, diseased tonsils, edema of the epiglottis and the whole tongue heavily coated. Under cocaine anesthesia I made several scarifications in the glosso-epiglottic space followed by a deep incision of the left lingual tonsil. Pus at once oozed out. Hot alkaline gargles and medicated inhalations were ordered. On the following day the patient declared that he would remain in this world and that he was perfectly well. My advice to have his faucial tonsils taken out was cast off with the excuse that "he could not spare the time."

Part of the title of this paper is the "Neglect of the Lingual Tonsil." I have not directly emphasized this aspect but by trying to prove the frequency with which this tonsil is the cause of many throat symptoms, I will have satisfied myself and, I trust, also my audience that this structure is greatly overlooked. I have studied over three thousand history cards in two dispensaries that I am associated with, and in one dispensary about 33 per cent of the cards have the condition of the lingual tonsil recorded. In the other institution about 5 per cent of the histories have note of the condition; in other words, a gross neglect in the examination of the throat and an injustice to our patients with no advancement of intelligence to ourselves. In the above three thousand cases we found 55 cases of abnormal conditions of the lingual tonsil. Of these, forty-three were hypertrophied; eight varicosities; two combined, i. e., varicose condition associated with hypertrophy; one abscess condition. Of the hypertrophied tonsils, one of the cases was associated with edema.

Of the 55 cases, 37 were females and 18 were males, or 67 per cent and 33 per cent respectively. Twelve, or 22 per cent of the cases were under 20 years of age; 16, or 29 per cent were between 20 and 30 and 27, or 49 per cent were 30 and above, up to 70 years of age.

Further study revealed the following facts: Sixteen had no associated condition; four had such condition as deflected septum or spur of the septum, conditions which, to my mind, have no material bearing. Ten cases were associated with hypertrophied faucial tonsils which might have some bearing, especially those cases under twenty years of age. The remaining 25 cases had such conditions as laryngitis, pharyngitis, lupus, glossitis, rhinitis and sinusitis, which I firmly believe are factors in the production of the vicious circle of the symptom complex. Of the first thirty cases mentioned, the study revealed that those cases are either below 25 years of age where the lingual tonsil has failed to atrophy or has remained hypertrophied by its association with its neighbors the faucial tonsils or that in those cases past middle life, the condition has been brought about by an impairment of the circulation, some constitutional disturbance or nervous state, but not by any local condition such as pharyngitis, tuberculous laryngitis, etc., as a primary condition *per se*.

Conclusions. 1. The lingual tonsil is greatly neglected in the examination of the throat.

2. Hypertrophy is a more frequent occurrence in females than in males.

3. Varicose condition of this tonsil is a frequent association of hypertrophy and is present in persons with disturbed circulation, being especially frequent in tuberculous patients. In my work at the Lucien Moss Home for Tuberculous and Incurable patients, practically all of the tuberculous patients have varicose lingual tonsils.

4. In my study of 55 cases of diseased lingual tonsils the time of more frequent occurrence was between 30 and 45 years of age.

5. I firmly believe that there is some connection between the lingual tonsil when hypertrophied or otherwise diseased and ovarian disturbance, possibly a similar connection to the congestive swelling and sensibility of the tuberculum septi and anterior end of the inferior and middle turbinates in dysmenorrhea.

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933 Lindley Avenue.

A MORE ACCURATE METHOD OF RECORDING TRACINGS ON THE GLATZEL MIRROR.

Dr. William O. Bonser, Toledo, Ohio.

In the use of the Glatzel mirror in a routine examination of the nasal passages, one of the principal difficulties for those who keep mimeographic copies of the results, is the accurate charting with the wax pencil of these results from the mirror.

One is expected to wait fifteen or twenty seconds after the mirror is exhaled upon and then make a rapid tracing with a wax pencil of the quickly vanishing moisture of condensation.

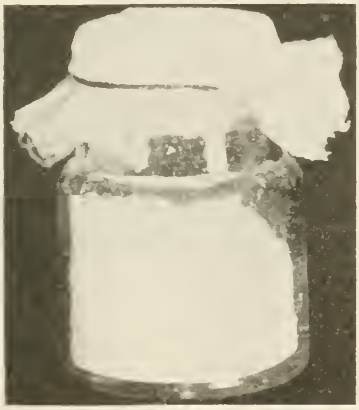


Fig. 1.

It is in this step that the greatest source of error occurs. Where the condensation is at all large as much as five to seven seconds are lost in completing the tracing of the right and left sides. One may be able to roughly trace, say, the condensation on the right side, but by the time this is done the condensation on the left side of the mirror is much smaller owing to the rapid evaporation. Then again there is the question of the personal equation which enters very much into the tracing through the use of the free-hand. These factors are such that many mimeographic records are but a poor copy of the condensation as originally revealed by the mirror.

These facts have prompted me to detail the method I have been using for some time. This consists in the use of a dusting powder which can be dusted over the mirror with instant application at the end of fifteen seconds (the time at which I record my results).

Gently blowing off the excess powder there is accurately and relatively recorded the right and left precipitation by means of the powder which becomes adherent to the condensed moisture (Fig. 2).

This area with the powder adherent stands out very distinctly and it is an easy matter then to transfer the picture to the mimeograph sheets.

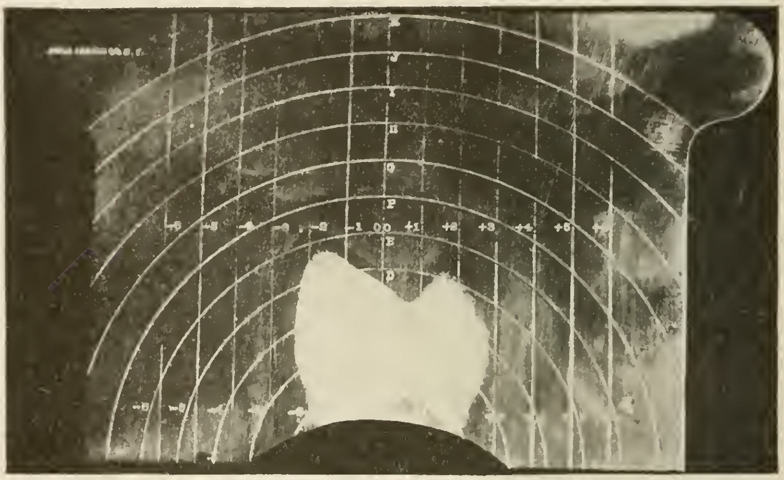


Fig. 2.

The powder used is dry sodium bicarbonate. I have been using a wide mouth bottle having a screw cap. Over the mouth I fasten a single layer of gauze by means of an elastic rubber band, the metal cap screwing over this when not in use to keep the powder from becoming damp (Fig. 1).

302 Colton Building.

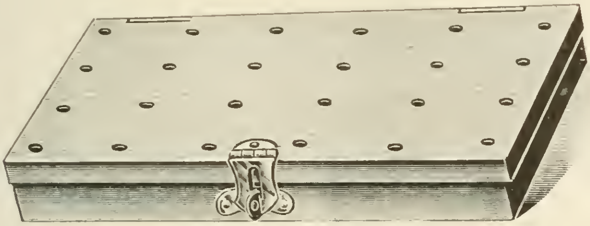
Abscess of the Thyroid Gland. F. LUZ, *Brazil Medico*, No. 10, March 10, 1917.

Patient, a woman 50 years old, who had had the goiter for 25 years but it never gave her any trouble. A few months ago, after an attack of dysentery a large tumor developed in the thyroid with a fistula into the esophagus. Some pus was expelled into the esophagus, relieving the acute symptoms, but the abscess required incision and drainage. Subsequently the author resected the left lobe of the thyroid in which the tumor was located. ED.

EAR, NOSE AND THROAT INSTRUMENT BOX.

Dr. Alice G. Bryant, Boston, Mass.

The diagram represents a small box containing the requisite number of ear, nose and throat instruments, conveniently arranged and easily sterilized, for house to house visits. It will be noted that the cover is provided with a series of holes, and the base is likewise perforated, as is also the posterior side. A hole has been drilled through the swivel key, through which a hooked wire may be passed. By means of this support, the box may be placed in boiling water and removed from the same. The wire hook serves as an admirable handle for easily and quickly removing the box from its container and placing it wherever desired.



Instrument Box.

The interior of the box is compactly provided with instruments, in two ways. In the first place, there are those placed in its floor. Then there are those held in a tray that extends three-quarters way across the box. The tray is supported by means of four small pegs mounted in the floor. To enable the tray to be held securely in place, three upright pins, arising from the floor, are fitted into as many holes in the tray.

The instruments arranged in racks in the tray are, from front to back:

A folding tongue depressor, a stapes hook or foreign body hook, two small needle-pointed knives, two handles for the above needle-pointed knives, Dr. Jack's ear forceps, Dr. McKay's ear forceps.

In the bottom of the box, to the right of the tray, there are four or five ear specula and a small nasal speculum held in place by forked supports. Other instruments found here and beneath the tray are two post-nasal applicators that may be used in turn in

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*Being a paper read at the twentieth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, Chicago, October, 1915.

one of the above knife handles, a bullet-tipped probe, a chromic acid nasal applicator, a peritonsillar knife, two silver ear catheters, a laryngoscopic mirror, one dozen alumino-bronze ear and nose applicators.

The box is made of copper and is nickeled; the tray is made of aluminum.

This case is 16.510 cm. long, 9.906 cm. inches wide, and 2.032 cm. high.

502 Beacon Street.

BONE GRIPPING FORCEPS.

Dr. Alice G. Bryant, Boston, Mass.

Let us consider a bone forceps, or what I like to call a gripping forceps. Many surgeons are probably familiar with the ordinary construction of these forceps. We will briefly refer to them. Two strong bowed handles are held apart by two powerful springs, which are attached to the inner surfaces of the handles. The springs interlock near the juncture of the handles.

The handles meet and cross by the fore handle, slipping through the hind angle. The hind handle from an angle of 60 degrees continues on its way to make the lower horizontal blade. It is stationary and extends beyond the terminal of the fore handle, while the fore handle, which is movable, is extended from an angle of 70 degrees to the horizontal and continues on its way to make the upper blade. It slides over the upper surface of the lower blade by peg and groove devices; and, at this point, I now pass to the terminals of the forceps, a device I wish to lay emphasis upon.

Several years ago, two patients presented themselves for operation. There existed a unilateral bony occlusion of the posterior nares with cystic condition of the antra. The walls were abnormally thickened in places, shelving to thin places here and there, in cross-section, much like a "V" in shape. The half-dozen or more different forceps I possessed, and many more that I had seen, did not appeal to me for the work in hand. Now I happened to notice that the opposing surfaces of the terminals of all these forceps met in parallel planes. Therefore, later, I

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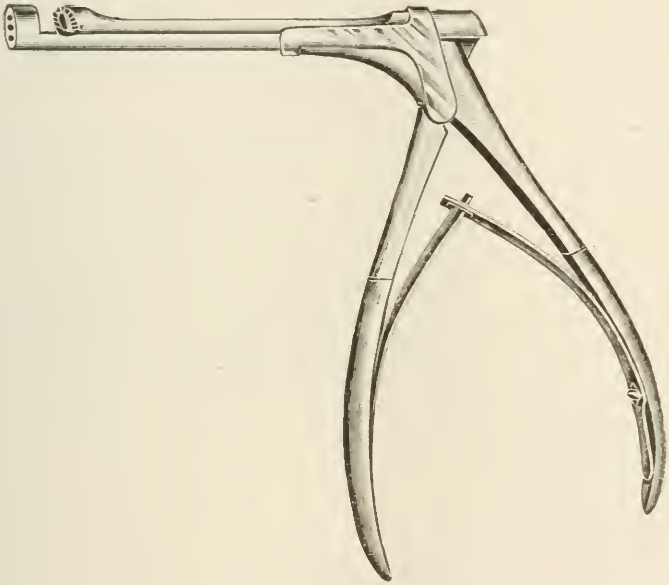
*Read at the twentieth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, Chicago, October, 1915.

decided to devise terminals with greater gripping power, and then I worked out the terminals to the above described forceps. The lower blade I had made to terminate in a fenestrated hood, oval in shape, compressed from side to side and flattened at its base. This hood was made to serve as a receiver for material removed. In its distal wall three holes had been drilled to enable one to push out the contained debris. The upper blade mounded up at its terminal, and its distal wall facing the hood was made to slant forward at an angle of 8 degrees, so that the apex of this surface would first impinge upon the bone. The upper blade slipped into the hood of the lower blade along the entire length of the hood. The distal surface of the upper blade was concave and its edges were serrated. When not in use the distal and proximal surfaces of the respective upper and lower blades at the base were separated at a distance of .0095 cm. It now remains for me to refer briefly to the advantages gained by this kind of device. The forward projection on the upper blade with its concave surface and serrated edges enables one to take a firm hold of the bone and by this device to get rid of the evil of slipping. Thus the bone may be held between the two terminals of the upper and lower arms in griplike fashion.



Bone-Gripping Forceps.

502 Beacon Street.

GLASS SCREEN WITH ADJUSTABLE STANDARD.

Dr. Alice G. Bryant, Boston, Mass.

It will be seen that this figure presents an upright support, that is bent at a right angle at its upper terminal; and, from this horizontal extension, a framed pane of glass is suspended by means of two hooks. To be more explicit, this horizontal rod, .9522 cm. in diameter, is 44.450 cm. in length. At its right extremity, it terminates in a hook. At its left extremity, it dips perpendicularly for .0762 cm. There it curves outward to the left, until its maximum distance from a plumb line falling from the left extremity of the horizontal rod is 9.207 cm. At this point, it curves inward toward the right, and finally assumes the perpendicular for .0254 cm. The perpendicular distance between the upper and lower terminals of the rod measures 44.450 cm. This rod is encircled by an immovable collar at its lower extremity. Then the rod extends for 13.335 cm. in a tube 17.145 cm. long by 2.963 cm. in diameter. The tube is mounted by a cuff, an inch in depth, upon which rests the immovable collar of the enclosed rod, by means of which the rod is kept from swaying.

This rod can be raised or lowered in the tube. It can be adjusted as to height and securely fastened by means of a screw which passes through the outer side of the cuff of the tube, and thus the pane of glass may be conveniently placed as to height. Further, this tube terminates in a fixed collar 7.302 cm. deep. From the posterior surface of the collar project two stationary horizontal flanges that are separated for a distance of 2.698 cm. Through the lowest flange, at its outer extremity, a hole has been drilled and threaded, and an upright screw passes through it; and it may be made to impinge upon the under surface of the upper flange. One is enabled to clamp the iron standard to a treatment table, by turning the screw by means of the cross-beam handle. The screen is of plate glass mounted in an ebonized wood frame, and it is 50.165 cm. in length, by 42.545 cm. in breadth.

The salient features of this apparatus are: The bowing out of the upright rod serves as a loophole for hand and forearm to

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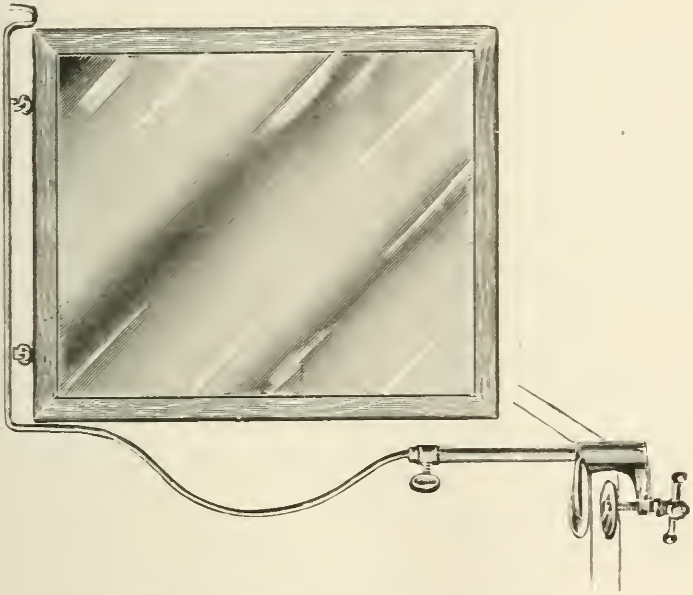
*Read at the twentieth annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, Chicago, October, 1915.

pass between the screen and rod during examinations and treatments. Thus we avoid touching either the screen or its standard. The screen is held lightly between the flexor surfaces of our forearms. The patient, by means of the hooked end of the horizontal rod, may easily swing the screen into position, or return it to its stall by a suggestion from the physician. For several reasons, a screen and standard of this device, or of a simlar device, should be a necessary requisite for every ear, nose and throat treatment table. First, the object in view is no small one, when we consider the sense of security it gives patients, in so far that they may cough at the screen and not at the physician when their throats are undergoing an examination. It clearly is a boon to sensitive patients.



Glass Screen with Adjustable Standard.

Second, there is a relaxation on the part of the patient.

Finally, it is very effective in permitting a more thorough and more prolonged examination, and it is more sanitary both for patient and physician.

502 Beacon Street.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

April 25, 1917.

Laryngectomy for Epithelioma. Dr. Hubert Arrowsmith, by courtesy of Dr. P. H. Sturges.

(To be published in a subsequent issue of The Laryngoscope.)

DISCUSSION.

Dr. Harris said that the successful cases of laryngectomy are still so few that Dr. Arrowsmith was to be heartily congratulated on the result in this instance. It was a very beautiful operation. The case, however, suggested two important questions: first, the wisdom of employing radium in such cases. One should never lose sight of the fact that radium is not only an agent for good but that it may be an agent for evil; and in this instance it may have done what it is known to do frequently, i. e., increase tissue growth. The other question had been recently discussed in the *New York Medical Record*—namely, the propriety of removing a portion of the growth for diagnosis, and allowing a greater or less interval to elapse before the operation. There is certainly much to be said against this procedure. As much as fifteen or twenty years ago Sir Felix Semon declared that there was great danger in allowing any interval of time to elapse—certainly not as much as two weeks—between the removal of a section and later operation.

Dr. Harmon Smith asked if the larynx had been microscopically examined after its removal. He cited an instance of a case reported by Sir St.Clair Thomson where carcinoma of the larynx had been removed inadvertently, where the effort of the operator had been exercised only to remove a specimen for microscopical examination. The microscopist assured him that he had fully circumscribed the malignant growth in the piece removed. Shortly afterward there appeared a large mass of granulation tissue at the place from whence the growth had been removed and it was with great restraint that he was able to withhold further operative measures, but believing firmly in the report of the microscopist that all of the malignant tissue had been removed, he did not operate but treated the granulations as granulations are treated elsewhere and after a short period it all disappeared.

A year and one-half after the removal of the growth there was no reappearance of the cancer.

Dr. Smith said he had understood Dr. Arrowsmith that ten or twelve days subsequent to the removal of the growth he had feared a recurrence and that radium was then applied.

Dr. Arrowsmith expressed his regret that he had not made himself clearly understood. He had stated that the specimen was removed at the first sitting, and that at the second sitting, ten days or two weeks later, all the visible mass of the growth was removed under suspension. Dr. Abbe had suggested this, with the idea that after it had been done he would apply radium, but it was not applied at all. Dr. Arrowsmith said that after talking the matter over with Dr. Sturgis he had urged the complete removal of the larynx, and the delay in doing this was because it took a long time to persuade the family to make up their minds. There had been a very decided change between the time when the specimen was removed and the removal of the mass,—there was a very marked extension of the growth in that period.

As to whether or not the larynx had been examined after removal, he could not say. He had not seen it since removal. The removal under suspension was performed on February 2; ten days later the laryngectomy was performed.

Dr. Smith said that the point he wished to make was that frequently after the removal of malignant tissue there would spring up in its place granulation tissue assuming the nature of the original growth and tending to lead the operator to conclude that he has a recurrence of the malignancy. Recently there occurred, at the Manhattan Eye and Ear Hospital, in his own clinic, a case in which a sarcomatous tonsil had been removed and a week later the operator was desirous of sending the patient to the General Memorial Hospital for treatment by radium, in the belief that the presence of an immense amount of granulation tissues was a recurrence of the sarcoma, but upon further consideration the case was held under observation and the granulation tissue disappeared and no evidence of recurrence of the growth has since appeared. Removal of malignant growths from the larynx is almost invariably followed by the appearance of granulations, which is the only means by which the process of healing can take place upon denuded cartilage.

Dr. Smith said that he had sent several cases of carcinoma of the larynx to the General Memorial Hospital, in each of which tracheotomy had been previously performed and in each instance radium was applied by a very eminent specialist in this line, but in no case had he been able to observe any benefit from its application.

Dr. McCoy said that this was a subject which was always fruitful for discussion, and one in which one should emphasize the points learned in his own experience. The first point that comes up is the possibility of this condition being specific. He had heard of cases in which larynges had been removed because the patients had what was supposed to be a malignant growth, which subsequent examination proved to be syphilitic. Everyone is aware that the Wassermann test is not always to be relied upon. A patient may have a Wassermann test made by one man who will pronounce it negative, while another man may make another test and find it three plus or four plus. One should always have the most reliable man that can be found to make the test.

In regard to removal of a section for examination, the pathologist (at the Infirmary) states that it takes him at least five days to harden and thoroughly examine a specimen, and that five days can readily stretch into six or seven. It had therefore been his practice to do a low tracheotomy, and at the same time take a section from the laryngeal growth. The pathologist then takes from five to seven days to make a report. Having made up your mind pretty well that the growth is malignant, it would seem that that would not be too long a time to elapse between removal of the section and removal of the entire larynx. One might have a frozen section made, but it was not certain that that was a sufficiently reliable method to warrant a radical operation. Dr. McCoy said that he had presented two such cases before the Section in the last year, upon which he had operated by a technique which he had found very effective—it consisted in observing a triad * * * which if followed faithfully gave an absolutely uneventful convalescence. Heretofore a very stormy convalescence has been expected after a laryngectomy.

The method which he advises is first a very low tracheotomy; second, sterilization of the mouth and teeth as thoroughly as possible; third (what he considers a very great aid), rectal anesthesia (Gwathmey method).

The cases that he had presented went through a practically uneventful convalescence. Since then he had operated upon a third case which terminated fatally, because of the non-observance by the house surgeon of a cardinal principle; that is, frequent change of dressings in upper part of wound. This patient not only had carcinoma of the larynx, but it had extended four inches down into the esophagus so that upper end of esophagus had to be resected, and he turned the esophagus into the neck as well as the trachea; nevertheless, the operation was successfully performed and he went on splendidly for a week, with only a slight rise of temperature. Then the dressings were turned over to the house surgeon, and instead of repacking and keeping the upper wound dressed diurnally, he got the idea that the thing to do was to slowly pull out this packing, and at the end of the week some of the secretion infected from the curette got into the patient's trachea, and he died of pneumonia in twenty-four hours.

Dr. J. G. Callison said that the rapid growth of this tumor between the time of removal of a piece for diagnosis and the operation illustrated the impotrance of shortening the time interval. In a number of the more recent methods of handling tissue, the diagnosis can be made in forty-eight hours at the outside. Dr. Strong, of the Woman's Hospital, recently published a paper describing a method of handling tissues by which he makes routine diagnoses in less than forty-eight hours.

Dr. Callison said further that he himself had recently modified the ordinary alcohol-anilin oil-xylol-paraffin method of fixation so that it is frequently possible to return a diagnosis in much less time than forty-eight hours. He had also seen some very excellent alcohol-acetone-paraffin specimens in which a diagnosis was returned in three hours after the specimen was received at the laboratory. That method, however, required a more than ordinarily well trained attendant; but it is possible for any ordinarily well trained attendant to prepare sections for diagnosis inside of forty-eight hours.

Dr. MacKenty said that in Dr. Arrowsmith's case the one-stage could not have been done, but whenever possible he prefers that method. In this country the two-stage operation is usually preferred. Dr. Arrowsmith was to be congratulated on his result. He agreed with Dr. Smith that radium is useless in cancer of the larynx. It has never been proved to effect a cure of the disease.

The removal of tissue should be discouraged, as it increases the danger of dissemination of the disease. When the esophagus is involved, operation is useless and operating on hopeless cases throws discredit on the operation. If the disease extends beyond the arytenoids, nothing short of block dissection of the neck will give the patient any permanent help. The growth will recur every time, though it may be slow in appearing. In one instance two and one-half years elapsed after the laryngectomy before the neck became involved. This was an advanced case in which the block dissection of the neck was not done.

Dr. St.Clair Thompson's case should not have been published, for it encourages the method of attack which is worse than useless.

Dr. Harmon Smith said that Sir St.Clair Thomson stated positively that the entire growth was removed inadvertently and that his effort had only been to remove a piece for microscopic examination, but that Dr. Lynch, of New Orleans, had reported a case in which the malignant growth of the larynx had been removed by suspension, with the full intention of complete removal, and the case had turned out successfully.

Dr. Yankauer said he wished to make a few comments on Dr. Arrowsmith's attempt to remove a carcinoma of the larynx by suspension, with the laryngoscope. Some cases can undoubtedly be removed by this method. Some time ago he himself had at Mount Sinai Hospital a case of carcinoma involving the epiglottis, both ary-epiglottic folds and one of the false cords. The patient refused operation, and even tracheotomy, but he was willing to submit to anything that could be done intralaryngeally. Accordingly the epiglottis was removed, with both ary-epiglottic folds, and the arytenoid and the mucous membrane was stitched together. This was done without tracheotomy. There was no edema afterward, and the parts apparently healed, but within a month afterward the mass began to reappear in the anterior commissure which gradually developed, and in four months a tracheotomy had to be done. Immediately following operation—a week afterward—radium was applied to this case. It was given with the largest tube that could be inserted. The patient had not then been treacheotomized and the radium tube could not be introduced into the larynx, for the patient could not breathe, so a special intubation tube was made. In order to prevent the deleterious action of some of the rays it was necessary to surround the radium with a definite amount of rubber, and it was a pretty close fit to get the tube in and allow room for the patient to breathe. In order to get around this difficulty, a lateral opening was provided, so that if necessary the patient might be given oxygen without removing the tube. The tube was left in for eight hours. A number of these applications were made, but in spite of this the growth recurred, and it was necessary to do tracheotomy. The patient has since died.

The attempts to remove these growths with the laryngoscope will fail when the growth is extra-laryngeal; but cases with a strictly intralaryngeal carcinoma of the kind where a laryngotomy would otherwise be performed with removal of the vocal cord, can be done under suspension.

Dr. Carter said that his observations, gained not from personal experience but from study, was that carcinoma of the larynx during its early stages, when confined to the cartilaginous laryngeal box may be attacked with some hope of eradicating it by intra-laryngeal methods. From what the previous speaker had said, it would seem that he considered it impossible to remove such a growth without complete removal of the larynx, even in the earliest stages of the disease.

Dr. Sturges said that he had nothing to add to the report excepting to say that the specimen had been examined by two pathologists, and the fact that both found it to be a squamous epithelioma proved the diagnosis to be, in all probability, correct.

Dr. Arrowsmith, in closing, said he was sorry he had either read so indistinctly or that the report was so constructed that he had been misunderstood. The facts, however, were all right, and Dr. Sturges was to be congratulated. Dr. Arrowsmith did not try to remove under suspension laryngoscopy; it was the suggestion of Dr. Abbe that as much as possible should be removed so that radium might be applied. It was certainly Dr. Arrowsmith's judgment, and he did it under protest.

Dr. Arrowsmith said he was glad that Dr. Smith and Dr. MacKenty had come out so definitely on the matter of radium in malignant disease. What they had said corresponded with his own views on the subject. Dr. MacKenty has practically demonstrated the truth of his contention that the one-stage operation is preferable to the two-stage operation. Dr. Arrowsmith said that his own experience with thyrotomy in the removal of growths of this kind is unfavorable. Even in the most circumscribed cases the growth has not been eradicated and the recurrence has been rapid.

Case for Diagnosis. Dr. H. Arrowsmith.

The patient, a young woman, consulted Dr. C. T. Sauer, of Brooklyn, about two years ago, who found an involvement of the lungs of tuberculous character, worse on the right side. The patient stated that she had always suffered from recurrent attacks of tonsillitis and sore throat, and from the onset of her trouble her cough has been an extremely troublesome feature. A tonsillectomy was performed about a year ago, and she had a very bad time with the anesthetic, followed by acute nephritis with suppression of urine for several days. The nephritis lasted for several weeks, and according to the doctor's report she was very sick. After the throat healed from the tonsil operation, the doctor discovered that the patient had a tumor in the larynx, and requested Dr. Arrowsmith to examine her. On the 3rd of January, 1917, under suspension and local anesthesia, a papillomatous mass was removed. That seemed to aggravate the cough, and the patient was coughing so much that she could not sleep, and suffered from frequent vomiting, with considerable disturbance of nutrition. The papilloma recurred promptly, and it was thought that the vomiting and aggravation of the cough might be occasioned by some involvement of the esophagus, so under oil ether colonic anesthesia, on the 25th of December, she was again suspended, the papillomata removed, and the base fulgurated as thoroughly as possible. Just below the crico-phayngeus the esophagus was very much obstructed, and the tubular obstruction extended down some three inches. The mucous membrane was thickened and in folds, and the condition was a very puzzling one.

The oil ether anesthesia was eminently satisfactory. The patient had no unpleasant symptoms, passed water freely after coming out from the anesthesia, had no kidney irritation, and practically no vomiting.

Four days later she was again esophagoscoped, and a practically normal esophagus was found. This time the examination was made under local anesthesia, and the patient was quite nervous, and when it was over she broke out in large cutaneous wheals—erythematous and raised—on the chest. Consequently it seems fair to assume that the esophageal obstruction encountered at the former inspection was an angio-neurotic edema. There was no question about that. The passage of the esophagoscope and subsequent passages of bougies for psychical reasons seemed to help the vomiting. That ceased, but the patient still continued to cough, so that it interfered with sleep and nutrition. The only thing which helped the cough was local applications, which she objected to, so that at last Dr. Sauer tried pituitrin, administered three or four times a day. That has helped her more than anything else.

Dr. Arrowsmith said that he would be very glad to have any suggestions as to the treatment of this case.

Primary Jugular Thrombosis Due to Tonsil Infection. Dr. Charles Goodman.

(To be published in a subsequent issue of The Laryngoscope.)

DISCUSSION.

Dr. McCoy said that the case was a very unusual one. A question that had occurred to him was whether when Dr. Goodman ligated the vein he found the thrombosis only in the facial vein, or whether it extended to the jugular as well? Would it have been just as efficacious to have tied off the facial as to have tied off the jugular? He had not understood just where the clot was found in the vessel.

Dr. Harmon Smith said that he wished to congratulate Dr. Goodman upon making a diagnosis where the symptoms of tonsillitis with a temperature of 104 to 105, together with the aches and pains described, are frequently almost a parallel with the symptoms of a jugular thrombosis. That most throat specialists would have hesitated to invade the jugular upon the clinical symptoms alone, particularly as it was definitely determined the ear was not involved, which as everyone knows, is the most frequent source of infection of the sinus.

Dr. Smith regretted that it was not possible to utilize some mechanical means of diagnosing a thrombosis of the jugular and believed that ultimately the sphygmographic record of the carotid artery would show a variance from the normal on the side where the jugular or sinus was thrombosed.

Dr. Goodman said that the thrombosis extended below the patient's facial tributary and included it. The needle was first introduced to see where it extended, and failing to get free blood, the dissection was continued up the tributary for at least an inch. The thrombosis of the jugular was very extensive—at least an inch to an inch and a quarter. That was why the jugular was ligated and removed.

As regards the diagnosis: the patient was running a very septic temperature, she had chills and an unusually high temperature of 107.2 when he was called to see her, and although up to that time cultures had been negative, in the region of the jugular vein there was a distinct line of infiltration and induration which could mean nothing else than thrombosis of the jugular vein. Physical examination of the patient yielded no symptoms that would indicate anything else, and it was therefore felt that she was entitled to that diagnosis. The operation revealed what had been expected.

Mucocele of the Ethmoid and Frontal Sinuses: Radical Operation.

DR. JOHN MCCOY.

The patient, a girl 14 years old, was first seen six weeks ago at the New York Eye and Ear Infirmary. She gave a history that she had been coming to the Eye Department for three years, and during that time had had two x-ray plates taken (plates presented) by Dr. Dixon. She presented herself because she had what was apparently a bony growth at the inner angle of the right eye, which pushed the eye downward and outward, and the process was pushing the eye further out all the time. Various diagnoses had been made—osteoma, sarcoma, etc.

Dr. McCoy said that he had been asked to see the patient and owing to the similarity of the case with one which he had seen an operation upon four years ago, he made the diagnosis of mucocele. The x-ray plates showed the manner in which the mucocele had pushed the orbital part of the frontal and the orbital part of the ethmoid out into the orbital cavity—pushing the eye externally.

It was decided that a radical operation was necessary, and the operation was performed under oil-ether colonic anesthesia. Dr. McCoy said that he had consulted with Dr. Gwathmey about this, and told him how little effect adrenalin appeared to have when ether was administered by the nose or mouth, and asked whether he thought that rectal anesthesia would lessen that difficulty. Dr. Gwathmey thought it would lessen the bleeding very much. An interesting point in regard to the fact that the pressure of this growth had destroyed many vessels that otherwise would have bled, or whether because of the method of administering the anesthesia by the colon allowed the adrenalin to have a better effect, it was certain that the hemorrhage during the operation was markedly less than usual.

The operation was performed through the classical incision, and in passing the periosteal elevator back, the orbital plate was found to be very thin and cracked into the ethmoid labyrinth, exposing a well of glairy mucus. The ethmoid plate was plainly visible, pushed out into the eye, and the sphenoid also was filled with this glairy mucus; it had destroyed practically all the ethmoid cells—there was nothing but a large hole filled with this mucus. The mucus was removed by suction, the orbital plate of the ethmoid was taken down, clearing out the ethmoid and sphenoid, and the patient is making a good recovery. When the slight swelling remaining from the operation has disappeared, the cosmetic result will probably be very good.

DISCUSSION.

DR. CARTER told of a case seen four years ago with mucocele of the ethmoid and frontal sinus, and regretted that he had not brought with him a cast which he had made. There was a very distinct bulging of the ethmoid area just in front of the eye and the floor of the frontal sinus. The eye was shoved to one side and one nasal cavity was completely obstructed and had been so for six months. The patient stated that previous to that time there had been copious discharge of pus. At operation, an incision was made from the inner extremity of the eyebrow downward along the side of the nose. The entire ethmoid area was found to be one big cavity filled with mucus. The os planum of the ethmoid was not pushed toward the eye, but was completely absorbed, as was also the nasal process of the superior maxilla, and there was considerable bulging at that point. When the cavity was opened, it was found that this glairy mucous material extended into the sphenoid. Free drainage was established into the nose and the ethmoid wound was closed. The case was followed up for a year and a half and had had no recurrence in that time, so that the recovery seemed to be complete.

Why should this case appear in the x-ray plate to be occluded by some opaque material? In his own x-ray, as in all the plates exhibited to-night, the affected area appeared to be filled with pus.

Dr. MacKenty showed two plates representing an extensive mucocele involving the frontal region, ethmoid, and sphenoid. Dr. MacKenty said that in these cases it was most important to remove all the mucocele membrane, otherwise the condition would not heal.

Dr. Herzig asked if the ophthalmological report showed any edema of the retina.

Dr. McCoy, replying to a query from Dr. Leshure, said that the orbital plate of the frontal sinus was thinned out like an egg shell, but not that on the antero-wall of frontal, so that bridge was left and deformity was not noticeable. The x-ray plate showed a slight shadow in the antrum and the antrum of the affected side was more shadowy than the other, yet the haziness was not of the character that appeared in the affected frontal and ethmoid above. Since operating, he had transilluminated the antrum, and it would give the impression that there was a thickened membrane, rather than fluid in it.

Replying to Dr. Herzig's query, Dr. McCoy said that he could not recall the ophthalmological report, but that the patient's vision was quite defective in that eye.

Tuberculosis of the Larynx. Dr. G. E. Davis.

Dr. Davis said that this patient first consulted him on April 18, on account of great hoarseness and coughing, and severe pain on swallowing. Examination of the larynx showed the characteristic edematous infiltration of the epiglottis, giving it the turban-shape. The ventricles of the larynx were infiltrated and bulged over the right vocal cord near the commissure. The case was not especially unique, but was presented on account of its characteristic appearance.

Practically nothing was being done in the way of clinical treatment, only a mild astringent of one per cent nitrate of silver being used; but for the intense pain, one per cent cocain in camphor water was applied a few minutes before the patient eats. The right vocal cord is now plainly visible, and the patient is much better in that respect; he is not so hoarse, the pain has diminished, and the cough is only about half as frequent. Examination of the lungs was negative. Wassermann, negative. Patient is receiving tonic treatment, and advised to give up indoor life and live on the farm.

Dr. Herzig suggested the application of urea quinine to the glands, a solution of the same to be used as a spray. It gives more relief than cocain in cases of tubercular meningitis.

Dr. Imperatori suggested injection of the superior laryngeal nerve with alcohol, which would relieve the pain for a time, varying from a few weeks to months.

Dr. Herzig said that he had injected three cases with the urea quinine and that it had given the same effect as with alcohol or cocain.

Cases of tubercular laryngitis are relieved by injections of a two per cent solution of urea and quinine hydrochloride, injections being into the region of the recurrent laryngeal nerve.

Diverticulum of the Esophagus; Radiogram and Specimen. Dr. S. McCullagh.

William P., age 73, presented himself at the clinic of Dr. L. A. Coffin at the Manhattan Eye, Ear and Throat Hospital on Feb. 29, 1917, complaining of dysphagia and regurgitation of food. This condition had been present for about 15 years. For the past two years had been practically unable to eat solid food. Large amounts of liquids taken at one time would lodge in the esophagus and cause severe dyspnea. This would be relieved by vomiting.

At three sittings I was unable to find the subdiverticular opening with the esophagoscope. Dr. C. J. Imperatori was present at the last sitting and also failed. We decided that suspension might be of value and on April 4 we suspended the patient and searched the diverticulum with the esophagoscope but failed again to find the opening. The bottom of the diverticulum was 25 cm. from the upper teeth.

The radiogram shows about five ounces of bismuth mixture in the diverticulum, all that was given at the time the plate was made. Examination with the fluoroscope at this time revealed none of the bismuth passing down. Estimations made later indicated that it held from 8 to 10 ounces.

The examination under suspension was made with great gentleness—the subsequent operation revealing no trauma—but a fairly severe febrile reaction ensued, a chill occurring 48 hours later, with a rise of temperature to 104°. The dysphagia was naturally increased and regurgitation of everything ingested became immediate and almost complete. Saline was given by the bowel.

On April 9, an operation by the method of Gaub, as described by Jackson was performed, the external work being done by Dr. J. E. MacKenty, while I used the tube. There was no difficulty in locating the diverticulum which lay posterior to and a little to the left of the esophagus. It extended below the level of the clavicle. It was dissected out and removed expeditiously and the esophageal wound closed after the insertion of a nasal feeding tube which extended well below the esophageal wound. A drainage tube was inserted to the bottom of the bed of the diverticulum and the wound was packed.

In feeding the patient after the operation it was evident that a marked contraction of the stomach had taken place as the introduction of 8 ounces of fluid would cause marked discomfort and congestion of the face. The patient developeda very troublesome cough which was productive of a very thick, tenacious mucus, of glue-like consistency, which had to be wiped from the mouth. There was a patch of consolidation ov in the base of one lung which showed no tendency to extend. About the third day after operation the wound discharge had the characteristic odor of colon bacillus infection. The use of Dakin's solution, one-half per cent, eliminated this entirely in 48 hours. There was little indication that the processes of repair were active in the wound at any time.

On the afternoon of April 18, nine days after operation, while dressing the wound, the patient was given a small amount of water by the mouth to swallow in an effort to determine the condition of the esophageal wound. Hemorrhage occurred, which ceased spontaneously after about six ounces of blood had been lost. About eight hours later there was a recurrence of the bleeding which was gotten under control by the house surgeon with some difficulty by packing. Feeling it was necessary to ligate the bleeding point, the patient was anesthetized and search was made for it without success, although an attempt was made to cause it to bleed. The wound was packed and the patient returned to bed. His condition became progressively worse. About 48 hours after this operation bleeding again occurred which was apparently controlled by packing, but the patient died a few hours later.

An autopsy was not obtained but examination through the wound showed a small esophageal fistula, very slight evidence of repair in the neck wound, and the posterior mediastinum full of clotted blood. The source of the bleeding could not be determined.

DISCUSSION.

DR. MACKENTY said that the case was a most interesting one for the diverticulum went down so far behind that it made a very dangerous looking hole. If he were called upon to operate on another such case, instead of making any attempt to remove the sack he would go down and cut the sac off and leave it in the neck and pack it, and in that way the mediastinal space would be safeguarded. At the second operation, the same deep hole was entered, which extended three inches below the clavicle—a good finger's length to the bottom. It was not in the anatomical posterior mediastinum, but in the so-called superior mediastinum. In the bottom of the cavity was another round opening as large as a little finger, into which the probe passed down two or three inches into the posterior mediastinum. It was evident that the hemorrhage came from this latter place.

The patient was a very poor risk to start with, and during the whole time of his sickness there was a low-grade pneumonia in the left lung, with a temperature of 101-3°. Pneumonia plus hemorrhage from the posterior mediastinum caused his death.

DR. A. C. CRUMP said he thought it would be interesting to the members of the Section—in connection with this discussion of the diverticulum case—to get an accurate idea of the relationship of the sac to the esophagus itself. He had been engaged in this work for two or three years, and the picture presented had been taken for Dr. Brewer. The patient was a man, 56 years old, who gave a history of difficulty in swallowing and regurgitation after eating. He had lost 25 pounds in weight. He had always been thin, but was only skeleton and bone when he entered the hospital. The problem was to find the opening into the sac and make an accurate entry near the opening, and to do the operation as quickly as possible. The method employed was to use a sausage skin tied at one end so as to form a long sac, and to have the patient swallow it while in a collapsed condition. The gut was slimy and slippery, and so easily swallowed. It was then filled with bismuth while the patient was standing, and thus a proper idea of the relationship of the parts was obtained.

The patient was operated upon ten days after entering the hospital, and had primary healing, going home two weeks later perfectly well.

A Case of Bronchiectasis, Showing Results of Bronchial Irrigation. DR. SIDNEY YANKAUER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. YANKAUER, replying to a query from Dr. MacKenty, said that he irrigated the patient twice a week, the first time using a normal saline solution, and the next time a dilution of Lugol's solution in the strength of one dram to a pint of water. The patients tolerate that without difficulty and it could probably be used stronger.

Replying to Dr. Imperatori, who asked if the patients coughed during the irrigation, Dr. Yankauer answered in the affirmative. You have to apply cocain through the bronchoscope.

DR. MCCOY asked if anything came back through the small tube

DR. YANKAUER replied that all the irrigating fluid, together with pus and secretion, was returned through the larger of the two tubes. A suction apparatus was employed with 10 pounds pressure. The patients do cough out some through the bronchoscope if the fluid is injected too rapidly. The quantity used was measured, and they usually get back all that was injected. The canula was introduced as far into the bronchus as possible. There were a number of little tricks to be acquired in doing this work. One does not always get into the lung abscess, for it is usually separated from the main bronchial tree. The main purpose was to remove all the secretion from the bronchi. In looking down at the bronchus, the outlines of the tracheal rings and other details are rather obscured, for the bronchus is covered with glairy mucus which cannot be removed by suction or wiping, but after the irrigation the rings and other details stand out very distinctly, so that it is evident that the obscuring material has been removed; and it is that removal of the tenacious material from the smaller bronchi that does the work.

Personal Reminiscences on Rhinology and Laryngology. DR. FRANCKE H. BOSWORTH.

Dr. Bosworth rapidly sketched his early experiences, as a teacher and writer, and in a very amusing way recounted his various tilts with some of the older masters of our specialty, especially Sir Felix Semon.

He also spoke of his early efforts to teach, that the nose was a part of the respiratory mechanism and not entirely the organ of smell.

His experiences, when cocain was introduced, the use of the nasal saw for the removal of septal deflections, the Jarvis snare and regarding the spokeshave for the removal of the inferior turbinate, were recounted.

Dr. Quinlan, Dr. Harmon Smith and Dr. Harris, in appropriate words, expressed the sentiments of the members present, in that the Section extended to Dr. Bosworth its congratulations, best wishes and hearty felicitations, to him as the dean of American Laryngologists, whose fame as a pioneer in rhinology and laryngology was world-wide.

Regular Meeting, May 23, 1917.

Two Cases of Vincents' Angina. Dr. Abraham.

Dr. Abraham said that about two months ago he had presented before the Section a case of Vincent's angina with extensive lesions. Two weeks ago another case came for consultation, and on Tuesday a third appeared. All of these cases had pure Vincent's angina. Fortunately neither of the patients presented showed marked lesions, both having been cured.

The first patient was a young man who appeared at the clinic with a marked lesion involving the entire left tonsil. The peculiar odor at once roused suspicion; besides that, there was a marked pyorrhoea. Smears from the tonsil and teeth showed the fusiform bacillus and spirilla of Vincent's angina, staphylococci, and many other bacteria.

After one treatment with carbolic acid, the tonsil smears showed a few of the Vincent's organisms, but no other bacteria. Smears from the teeth still showed Vincent's organisms and many other organisms. After the second treatment, the tonsil smears showed no bacteria, but the teeth were still infected with a few Vincent's organisms and others.

After the patient was discharged from the hospital, the Vincent's angina attacked the opposite tonsil, but one or two applications of the carbolic acid cleared up the condition.

The second patient was a young woman, a nurse, who complained of severe pain on the left side of the throat. Again the peculiar odor and lesion aroused suspicion. Examination of smears from the tonsil showed numerous fusiform bacilli and spirillae of Vincent's angina. The left tonsil was ulcerated and the acid was applied with cotton tipped applicators. After one treatment the tonsil smears showed very few Vincent's organisms. After the second treatment, no spirilla nor fusiform bacilli could be found.

In the clinic the acid is usually applied with cotton tipped applicator. One must be careful to get well down beneath the necrotic tissue, so that the acid will come well in contact with the ulcerated surface. In this instance it was made three quarters of an inch deep. The anterior pillar was pulled back so that the acid might be thoroughly applied.

Dr. Abraham said that he had used this acid treatment in all of his cases of Vincent's angina and had never had any adhesions follow its employment. The tonsils clear up leaving only a little scar tissue. He uses the purest acid obtainable. The acid application is followed by one of alcohol; it makes no difference if the acid goes a little beyond the involvement, for the alcohol will neutralize it. No cocaine was used with these cases.

In the majority of cases one application of the carbolic acid is sufficient; in others, two will be necessary.

Dr. Arrowsmith said that Dr. Abraham had succeeded almost as well with the carbolic acid treatment as others did with salvarsan.

DISCUSSION.

Dr. Callison said that some of the cases of Vincent's angina had suggested to him that the etiological organism was some form of streptococci, and that Vincent's spirillum was present as a secondary soprophyte.

Dr. Smyth said that he did not quite understand what Dr. Arrowsmith's treatment was.

Dr. Arrowsmith said that he employs a five per cent solution of salvarsan in glycerin.

Dr. MacPherson, replying to Dr. Scruton's remark, said that the literature reports show that the spirillae and fusiform bacillus are found in a great many conditions in the mouth. In different forms of stomatitis, in noma and in other conditions. The finding of both on a smear does not prove the presence of Vincent's.

Chancre of the Soft Palate. Dr. J. H. Abraham.

This patient was first seen about two weeks ago. No history of infection was obtainable. Examination showed on the soft palate what he considered a typical lesion. Smears were examined, but showed no spirochaeta pallida. Wassermann test also was negative. These were repeated twice, with no positive results. A thorough blood count had been made, but Dr. Abraham said that from past experience he was at first confident that it was a case of initial lesion. He presented the patient before giving any treatment, as he wished the members to see the lesion.

DISCUSSION.

Dr. L. M. Hurd asked if he was correct in understanding that Dr. Abraham removed all the slough.

Dr. Abraham replied that he removed as much as possible without producing hemorrhage.

Dr. Hurd said that recently he had seen a case in which the lesion embraced the lateral pharyngeal wall. The entire tonsil was gone and half an inch of the adjacent portion of the tongue was a mass of slough. It was the only case he has seen where salvarsan had not cured the condition and he had feared that the slough would affect the big vessel. He did not think one could get the slough off.

It does not make any difference whether one uses carbolic acid or trichloracetic acid—after one or two applications you cannot find the fusiform bacillus and spirochaeta, but the process continues.

Dr. Freudenthal said that he had never seen a case of primary specific infection of the throat, but that Dr. Abraham's case reminded him of two instances of primary infection of the nose that came under his care several years ago. These two cases concerned two physicians, both gynecologists. They had examined women in the clinic; both of whom were specific. Then in discussing the cases they had picked their noses and in that way got the primary lesions. The cases very much resembled this one.

Dr. Faulkner quoted the definition of cancer and of tubercular ulcer as given in an old text-book: The malignant ulcer in the mouth has hard elevated edges; the tubercular ulcer has irregular edges, etc., and the specific ulcer is a deep ulceration with perpendicular walls. Before entering upon special work, he had seen more cases in London in six months than he ever expects to see in special work. These three definitions are as nearly correct as they can be made; but a red hard edge is not likely to be a tertiary lesion. In his opinion, the appearance of the growth was fairly typical of epithelioma.

Dr. Callison said that as he understood the history the lesion seen in this patient had been present since the first of February. A specific lesion of that duration will give a positive Wassermann reaction in over 90 per cent of cases. The cervical glands in these cases were large, diffusely infiltrated and adherent on both sides of the neck. In his opinion, Dr. Faulkner's diagnosis of epithelioma was probably the correct one.

Dr. Abraham, closing the discussion on the three cases, said he was aware that salvarsan had been very successfully used in these cases of Vincent's angina, but before he had heard of it he had been using carbolic acid and the results were so good that he had simply continued it. He made no claim about its being better than the salvarsan.

Miss L., who was present, would probably remember a case which was a little more severe than these. The glands in the neck were as hard as eggs, showing extensive involvement. Dr. Hurd said that it was hard to remove the tissue. Miss L., with a tongue depressor held the mouth open and the necrotic tissue was cut away with the scissors until it was possible to get right down to the ulcerated area. In that severe case the acid was applied once a day, and every day one could see the disappearance of the germ from the field of the microscope. The Doctor spoke of the presence of the Vincent's spirillum as being more or less typical to the oral cavity. There is considerable literature on the subject in French and German, and one of the writers states the seriousness of the disease when complicated by diptheria was very great. The Doctor said something about these germs not being the cause of the ulceration, authorities claim that the Vincent germs are responsible for this peculiar form of ulceration; while the spirilla are present in many cases, quite a variety of them; they are present in dirty mouths, especially around the teeth.

The last case was presented with a tentative diagnosis, and it might be an epithelioma, but Dr. Abraham wished tbe members to see the case. He would have a section made for pathological examination, and would also have extensive blood tests made to eliminate if possible, Hodgkin's disease, leucaemia, etc. He had not intended to present the case with an absolute diagnosis of initial lesion, although when first seen it had all the appearances of such a condition—a typical indurated, ulcerated area. The raised edge had only appeared in the last few days. He would report on the case later.

Dr. Harris asked if there was any contra-indication to making use of the therapeutic test.

Dr. Abraham replied in the negative, and said that he would give salvarsan and make all the usual tests.

Dr. Harris said he would reverse that proceeding and give first a reasonably long test with a strong anti-syphilitic treatment.

Case of Orbital Perforation Complicating Nasal Sinusitis. (Patient previously presented.) Dr. T. J. Harris.

Dr. Harris stated that he had presented this patient before the Section at the January meeting, and had then promised to show the case again later in the season. The perforation had followed an ethmoiditis and empyema of the frontal sinus.

At the time of the first presentation, the wisdom of the method of procedure adopted, viz: opening the ethmoidal cells intranasally was questioned and some doubt was expressed as to the ultimate outcome, but it was expressly stated that the method was pursued on account of the exigency of the case. The ethmoidal condition cleared up promptly but the course of healing was complicated by an osteomyelitis of the frontal bone which developed with formation of a number of abscesses. Among the measures adopted the patient received a thorough course of an autogenous vaccine (streptococcus albus), which did more than anything else toward checking the progress of the osteomyelitis.

At present the patient shows still a little reddening at the eyebrow, but all that was not absolutely cured was a small fistula, which Dr. Harris said probably represents an effort of nature to extrude a small fragment of bone. The discharge from the ethmoid had ceased long ago, and the patient was well and going to his work.

Dr. Harris said that when he presented the case in January he was under the impression that the infection present was a rather rare one, but he had since learned that at the Manhattan Eye, Ear and Throat and other hospitals there have been a succession of cases of streptococcus albus infection this winter.

DISCUSSION.

Dr. Yankauer said that a year ago he had had a similar case. The patient complained chiefly of tinnitus and deafness. On the posterior wall of the Fossa of Rosenmüller was a thickening and a peculiar grayish, irregular appearance. A specimen was removed and it proved to be a spindle-cell sarcoma. The patient subsequently died. He was about seventy years old.

Presentation of Specimens of Malignant Conditions. Dr. L. M. Hurd.

Dr. Hurd said he thought the Section might be interested in seeing these specimens, one of which possessed considerable clinical interest. The other was simply a rather unusually good specimen of epithelioma of the arytenoid cartilage and epiglottic fold.

The larynx presented was rather large and broad. In 1911 Dr. Coakley saw the patient, a man, and found in the interior commissure what looked like a white mass that might be either a cyst or a papilloma. The patient had been referred by Dr. W.. and was sent back with that diagnosis.

In 1913, the patient consulted Dr. Hurd, who examined him and found a pedunculated growth about a third of an inch in length, attached to the anterior commissure, and with such a slight pedicle that in using the Elsberg applicator to cocainize the region the growth was rubbed off. In 1914, the patient returned with another pedunculated growth of the anterior commissure, which was removed; and still again in April, 1915, another popilloma was removed—all pedunculated. Then patient disappeared until April of this year, when he returned with the larynx almost blocked. This time he was urged to have a tracheotomy done immediately, but he wanted to go back home for a week. He returned and a tracheotomy was done, and a week later a laryngectomy was performed. The larynx was absolutely filled up—apparently no air space whatever, and yet the man was breathing through the larynx. The operation was performed ten days ago.

The other case had no particular history, except that for three or four months he felt a fulness in the throat and suffered from dysphagia. The growth especially involved the arytenoid. On looking into the larynx the mass could be seen, but on taking out the larynx it was found to have filled up to the thyroid cartilage. It was an enormous mass. Microscopic examination showed it to be epithelioma. It was removed on Saturday by the two stage operation.

DISCUSSION.

DR. MACPHERSON asked about the after treatment in such cases. A high mortality, due to pneumonia, usually follows. It would seem that some method might be devised whereby septic infection would not get into the lungs so readily.

DR. HURD said that both patients were operated upon by the two-stage operation. The tracheotomy tube is usually left in for a week, but the patient wanted his son to come down. In the meantime, the teeth were cleaned as thoroughly as possible. Each of the men had lost some teeth, but the mouth was put in as good condition as possible. A low tracheotomy was performed, and dissection was made all around the trachea and up one side of the larynx. It was then packed with iodoform gauze, and at the end of a week it was blocked off with tissue. The first case was operated under cocaine. This man had a very thick neck, and he suffered considerable shock and his temperature after operation was 106. His pulse went to pieces; then he began to improve, and picked up rapidly, though he had some bronchitis. Unfortunately the wound became infected and everything sloughed out. He is in good shape now, however, and is sitting up in bed and is happy.

The second man was operated upon under ether oil anesthesia, and some preliminary blocking off of the trachea. He had anything but a clean wound, and yet he has had a practically normal temperature since Saturday.

Paper: Fossa of Rosenmuller from a Rhinological Standpoint. DR. SIDNEY YANKAUER.

(To be published in a subsequent issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. HARRIS said that a paper by Dr. Yankauer is always refreshing and instructive, for when he takes hold of a subject he always handles it thoroughly. Some of the points which Dr. Yankauer had brought out in reference to sinusitis, and also in regard to systemic infection were rather new. His statements in regard to cough were also most instructive, for few would think of looking into the fossae of Rosenmüller for the causation of a cough. The main difficulty lies in keeping down the adhesions in these fossae, and Dr. Yankauer was doing just about what all have been doing for years, though perhaps he had been more fortunate in his nitrate of silver applications than some. Certainly whatever is used in breaking down these adhesions may give the desired result for a time, but then they reform; it is very difficult to keep these fossae in the desired condition. Hereafter he (Dr. Harris) intended to pay more attention to this region as a possible source of nasal and pharyngeal symptoms.

Dr. Robinson expressed the wish that Dr. Yankauer would describe the conditions found in several of the lesions of which he had spoken.

Dr. Guttman said that the view of the relation of the bands in the fossa of Rosenmüller extending to the eustachian cushion from the rhinological standpoint was quite original. They used to be found quite often in cases of tinnitus where there was no other cause found. They used to be severed with the finger, and some of the results were brilliant. They were mainly the result of faulty adenoid operations or after-diphtheritic conditions.

Dr. Yankauer said he believed that in most instances these adhesions follow the presence of adenoids, but adhesions in the fossa of Rosenmüller are not the only results left after inflamed adenoids have disappeared. In the space between the fossae one often sees small holes and pockets which correspond exactly in their distribution to the divisions between the combs of the adenoid mass; and it is easy to see how various portions become adherent when the adenoid mass becomes inflamed, and when the inflammation disappears the bands remain, and you get the various pockets and adhesions.

In regard to the method of getting rid of these adhesions, Dr. Yankauer said he thought it bad practice to break them with the finger; they are usually old; when found in adults, they have been there since childhood and are very dense and hard, and form bands which are sometimes difficult to cut through even with the forceps. When an attempt is made to break them down, the mucous membrane is torn through and strips are torn off with the adhesions when they are freed. The mucous membrane closes up again, and the adhesion is reproduced. For freeing these adhesions, he uses a punch like an ordinary nasal punch, but a little longer; it was originally devised to open the sphenoid sinus. With this he punches out a piece of the adhesion, two or three millimetres wide, working through a direct speculum. There is no difficulty with patients who have been trained to the use of the speculum, or if cocaine is used. When the bleeding ceases, an application of 10 per cent nitrate of silver is made; later a weaker solution is used on a cotton tipped applicator. making pressure on the parts and so massaging them. Very often, in young persons, the posterior wall will fall away, as if it were stretched and elastic. In adults, the recession of the mucous membrane is not so prompt. There is little difficulty with the reformation of these adhesions when they have been properly cut away.

In regard to the deep pockets, such as Dr. Hurd described, they probably occur oftener than is supposed. If an examination is made with the post-nasal mirror they cannot be seen, nor with the pharyngoscope; but if one is accustomed to use the direct speculum, and gets the beak back of the eminence and lifts it forward, the full depth can be seen. In the case described by Dr. Hurd, where the fossa is long and narrow, if he will test the posterior pharyngeal wall, he will probably find very thick tissue—the remains of the adenoids. If that adenoid tissue has all been cut out, the only thing to do is to wait until the mucous membrane recedes.

Dr. Harris, replying to an inquiry from Dr. Yankauer as to how he removes these bands, said that he uses the Holmes curette and the naso-pharyngoscope.

Dr. Yankauer said he did not see how they could be removed in that way, but that it was very easy to do the work with the direct speculum.

THE

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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to The Laryngoscope.)

A NEW METHOD OF WORKING OUT DIFFICULT MECHANICAL PROBLEMS OF BRONCHOSCOPIC FOREIGN-BODY EXTRACTION.*

Dr. Chevalier Jackson, Philadelphia, Pa.

The endoscopic removal of a foreign body that has no sharp edges or points to catch in the bronchial wall and that is not impacted is quite simple. On the other hand certain foreign bodies with long and sharp points or with acute angles may require much ingenuity to disengage them so that they become free to move and safe to make traction upon with forceps. To pull upon an entangled foreign body in either the bronchi or esophagus is to court disaster. If such traction be not fatal, as it usually is, ultimate removal is made much more difficult or impossible.

In this disentangling procedure when all previously made instruments had failed the author found it possible to solve the problem by means of probes and various forms of instruments bent and made to suit the purpose demanded by the mechanical problem presented in the particular case. In some cases it is possible to work out beforehand a curve or an angle that will do the work; in other cases it is necessary patiently to form and reform the end many times, testing each time, until the precise angle or turn or series of angles or turns is obtained to do the work.

The faults of stock instruments for this purpose are three. 1. They may be of not quite the proper shape. 2. They may have been subjected to too sharp bending which destroys the tensile strength of the steel. 3. If the shape is not exactly proper the instrument will not accomplish its purpose.

If the tensile strength has been impaired the instrument may break; because endoscopic instruments are necessarily delicate and the maximum tensile strength of the best tool steel (Stubb's) is none too great when reduced to the thread-like size needed for work in solving a difficult mechanical problem in the small bronchi of children. When the endoscopist himself works out an instrument he knows that it has not been subjected to strains of strength-impairing character. If such strains occur he should throw the steel away and start afresh.

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*Read before the American Laryngological, Rhinological and Otological Society, June 1, 1917.

The author's procedure when a difficult case is encountered, is to study over his previous cases of the same kind of foreign body; if, as is now usually the case, he has had to deal with similar foreign bodies. Next, a bronchoscopy or an esophagoscopy, as the case may be, is done, with all previously used instruments at hand for use if, on endoscopic study, they meet the requirements of the problem. If they do not, mental notes and measurements are taken and a series of probes or other instruments is made. These are tried out thoroughly on the work bench using a piece of rubber tubing for a manikin. One end of the tubing is anchored in a small vise which lies on the table, giving stability to the distal end of the tubing (Fig. 1). If the instruments will not enable the endoscopist to disentangle the foreign body in this manikin, obviously they will not enable him to do it in the living patient; and a continuation of careful, patient study is undertaken until the problem is solved.

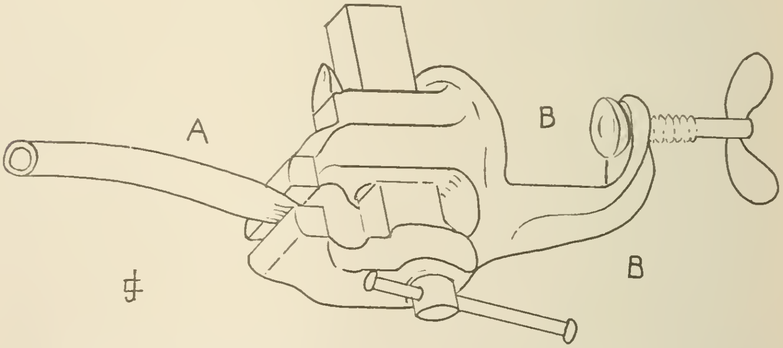
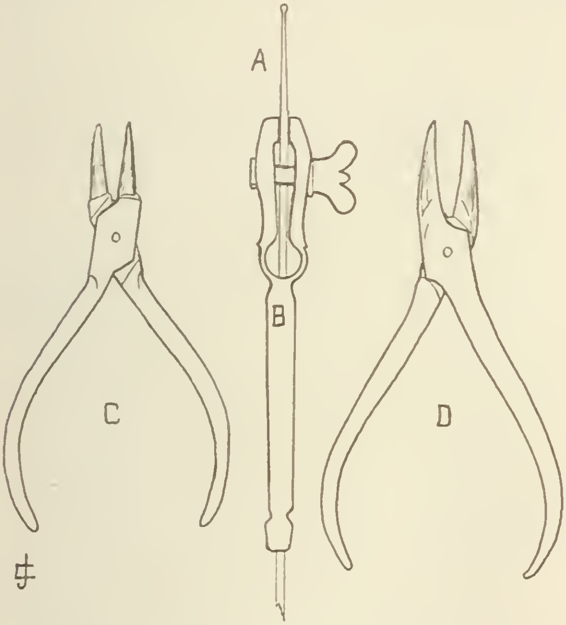
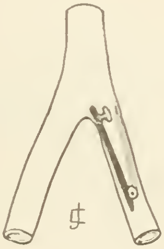


Fig. 1. A simple manikin for working out mechanical problems of foreign body extraction. Almost any problem can be stimulated.

Having solved the simulated problem on the manikin, the solution of the real problem in the patient is attempted, and usually with success. If unsuccessful a slight modification of the probes may succeed. This modification is made by means of the spirit lamp and the pliers (Figs. 2 and 4), which are sterile and ready on a sterile table in the operating-room. The instrument must be allowed to cool slowly. If chilled quickly, as by immersion in water, the steel will be hardened and consequently made brittle. Cooling slowly anneals the steel. These slender instruments cool almost instantly. They should be, when finished, withdrawn slowly from the flame in an upward direction so that the heat after leaving the flame will prevent sudden chilling in the air. If some degree of spring is desired the finished instrument can be hardened "right out" by immersion in water when dull cherry red. Then the temper can be drawn to the degree desired by any one of a number of methods. This tempering had best not be attempted by anyone not thoroughly familiar with the procedure. Fortunately, tempering is very rarely required. For practically all purposes such as we are considering here, the annealed steel serves best. If the tool steel is of the highest quality it will have sufficient stiffness when annealed. Under no circumstances should work of this kind be attempted with wire, machinery steel, or iron.





Figs. 2 and 3 and 4. Pliers for the bending of probes. The surfaces of the jaws are polished so as not to roughen or mutilate the probes in bending. At A is shown a probe-shaped steel rod, a number of which are prepared beforehand for shaping to suit the particular mechanical problem when encountered. The probe is shown held in a jeweler's hand vise for shaping. After removal from the vise, a handle is made by bending over to a right angle about 1 cm. of the proximal end.

Fig. 5. Glass tube used for demonstration of mechanical problems and sometimes for study of them.

On the tool table, in addition to the newly-wrought instruments, are a number of straight steel rods formed with probe-shaped ends

(Fig. 3) and a number of straight unwrought rods. These are for forming an entirely new instrument if desired, though this will rarely be necessary unless the position of the foreign body has shifted, thus changing the mechanical problem. Such shifting rarely occurs in the class of cases here considered.

The probes (Fig. 3) are made by filing in a watchmaker's lathe. Of course, they can be made up in quantities at the instrument-maker's, but those made from the steel rod by the endoscopist himself inspire the most confidence. They can be filed to shape while being held in a hand-vise, if no small lathe is at hand; but the lathe-made probes are more quickly and conveniently wrought to shape. In the solution of some problems a flattened or a squared cross-section on the end of the probes is advantageous. In this case the cone of the lathe is locked at the proper position and accurate filing can be done. The most convenient form of handle, it has seemed to the author, is the simple right-angle bend shown in Fig. 3. This is always made last and is turned so as to be opposite the bend formed on the distal end; so as to be in all instruments in the same relation. By this means the position of the probe-end is always in mind.

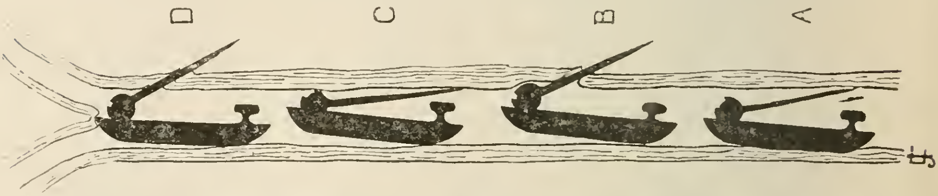


Fig. 6. Schema showing how a bar pin was pushed down by ill-advised alternate pushing and pulling until it had been forced into the lowest possible position. Complete perforations as at B and D are usually fatal.

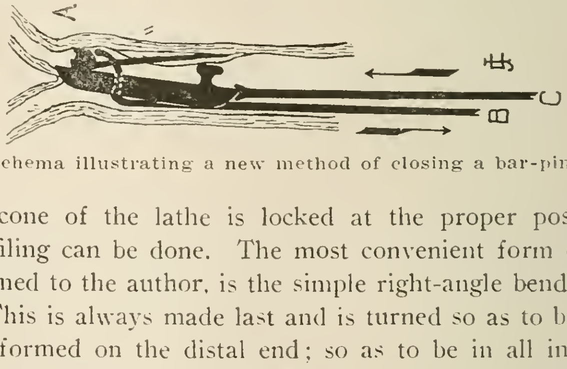


Fig. 7. Schema illustrating a new method of closing a bar-pin.

In forming probes for the purposes herein mentioned it is necessary to see that they are not hooks; that is, that they do not approach too closely to a right angle. A more or less obtuse angle or an approach to spiral form will always permit them to be withdrawn by backward rotation. To have an instrument so entangled as not to be able to disengage it would be a serious or possibly fatal predicament, as reported by Hubbard in the use of a snare.

Great caution is necessary in the use of these bent probes and the utmost delicacy of the sense of touch must be exercised, as it is very easy to perforate the bronchial wall with either the probe or the foreign body.

TOOLS.

The tools needed for this work are mainly those of the jeweler, not those of the blacksmith or machinist. Extreme delicacy and precision are essential. Lack of these will result in either a clumsy instrument or one with weak places.

Lathe. A good precision lathe is essential, and it must be delicate. The Webster-Whitcomb jeweler's lathe is a standard quality. It should have a full assortment of chucks and attachments. In passing it may be said that the mastoid curettes of the otologist can be sharpened from the inside of the bowl by a carborundum burr held in this lathe, so as to cut in a way that will seem incomprehensible to those used to dull curettes.

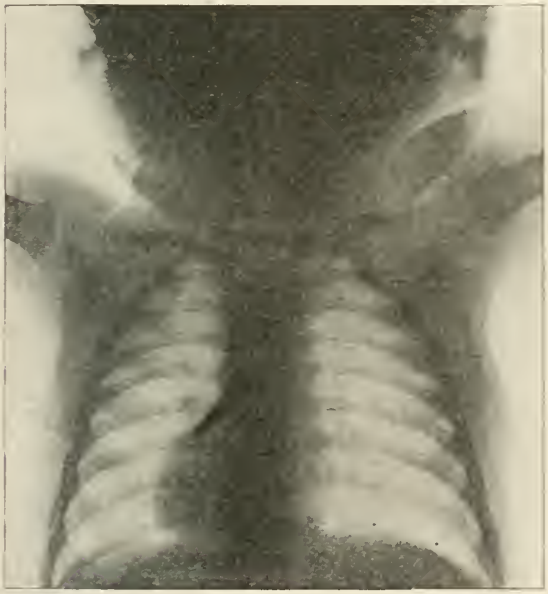


Fig. 8.

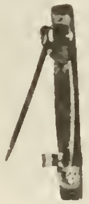


Fig. 9.

Fig. 8. Radiograph showing bar pin in left bronchus of four months old infant.
Fig. 9. Bar pin removed bronchoscopically from the left bronchus of an infant of four months.

Work-bench. A firm, solid work-bench at a window where good bright daylight may be had is essential.

Vise. A small jeweler's bench-vise is needed. It should have detachable leather facings for the jaws so as not to roughen the probes when they are held after finishing. In the rougher part of the work the more accurate holding of the bare jaws is needed. The common cast-iron vise is a mere toy and will not serve. A small hand-vise or a jeweler's pin-vise is also needed.

Files. A set of jeweler's needle files are the best for this delicate work. They are made of twelve different forms of cross-section.

Pliers. Square-nosed, round-nosed and pointed, flat-nosed pliers are needed. Two sets are essential; one set with roughened jaws for the roughing-out, and one set with absolutely smooth and polished jaws for bending the finished probes. The pliers used by opticians for fitting spectacle frames are best for the latter purpose. A pair of heavy cutting pliers are convenient for cutting off the probes, or other instruments, to length.

Anvil. A jeweler's anvil is very convenient as is also a bench-block of faced and smoothed cast-iron, for straightening rods, etc.

Polishing tools. A good jeweler's motor with carborundum grinding wheel and a buffing wheel is very convenient. Emery cloth of finest grain and rouge cloth are needed for hand-smoothing and lathe-finishing. A high polish is objectionable, but the instruments should be smooth. They may be blued after finishing by heating in the bunsen flame. The dark blue instruments of dull finish are more easily seen.

Alcohol lamp is convenient because it can be sterilized and placed on the tool table in the operating-room for bending probes. For use in the workshop the bunsen gas burner may be used.

Manikin. The manikin of Killian was made to teach introduction of the tubes. It was for use in the sitting position. The manikin of Von Schrötter was for teaching introduction in the lateral position. Hubbard has made an excellent manikin for use in simulating the recumbent position. The author uses for the working out of mechanical problems a bit of drainage tubing about 20 centimeters long, the distal end being held in a small cast-iron vise that can be purchased for 25 cents at any hardware shop. In use it is not fastened to the bench, but allowed to rest on the bench, desk or table. Much practice may be had with it at odd moments. For demonstration of mechanical problems, and sometimes for study of them, a glass tube is used, Fig. 5.

Other tools. The other tools that are convenient and that the mechanically-inclined endoscopist can and will naturally add to his workshop are too numerous to mention. Saws, drills, reamers, screw-plates, taps, dies and so on *ad infinitum* can be used with pleasure and profit by those who naturally turn to such work as recreation. But it is not for such that this article is written. It will not pay the busy bronchoscopist to make his own instruments for general work. There are some instruments, however, such as those hereinbefore described that he can make for the particular case that will enable him to get out a foreign body that otherwise he will never get out.

ILLUSTRATIVE CASE.

Infant, aged 4 months, aspirated a bar pin, to remove which two attempts had been made, first under ether anesthesia, next under chloroform. Tracheotomy had been done as stated by my predecessor in the case (who has since urged me to make this publication of it) for the combined reasons that (a) the first bronchoscopy was followed by subglottic edema; (b) the pin was supposed to be in the cervical trachea reachable by tracheotomy; (c) this failing, removal could be accomplished by bronchoscopy through the tracheotomic wound. These procedures all failed, however, and the child was brought to our clinic. Temperature, 104.3; pulse, 158; respirations, 52. The breath was foul, the lips were cut, sloughing shreds of mucosa were visible in the pharynx. Muco-pus was streaming down the neck from the tracheotomic wound in

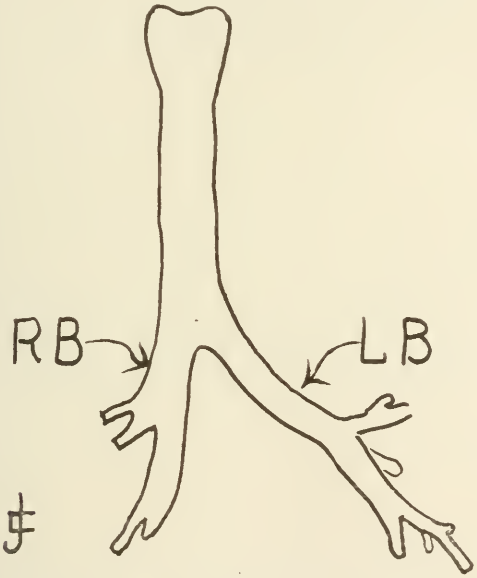


Fig. 9. Cast of the trachea, main bronchi and stem bronchi, of an infant one year old. Actual size. Note the size of the main bronchi; no larger than a large straw.

which was an over-sized aluminum cannula full of crusted secretions. The child was pale and very fretful. It moaned almost constantly and slept but little. We did not expect it to live longer than a few hours; and in consultation with my predecessor in the case it was decided that nothing was to be done but to try to get the child to rally. It was clear that it was suffering from surgical shock and sepsis, not from the pin. Contrary to our expectations, the child lingered along for a few days and then slowly began to improve. At the end of three weeks the temperature was almost normal and the child was in fairly good condition. There was a loose cough, dullness over the left lower lobe, which was full of rales. A radiograph showed imperfect drainage from the left lower lobe. The bar pin was seen to be in the left bronchus about 6 millimeters below the bifurcation.

Without anesthesia, the 4-millimeter bronchoscope was passed through the mouth. There were patches of exudate in streaks on the tracheal wall. Pus filled the left bronchus, and no air seemed to be passing in or out of the left bronchus, whose walls were so swollen that the end of the pin was hidden from view. The pin was apparently wedged fast. It was thought best not to make any attempt to work with it for a time, for both local and general reasons. Meanwhile a method of removal was to be worked out in the bronchoscopic laboratory.

It was quite clear from the statements of my predecessor and from endoscopic inspection of the case that what happened was this: As shown schematically in Fig. 6, the bar pin had been at first lying loosely in the trachea, as shown at A. Traction resulted in causing the pin-point to enter the tracheal wall as shown at B, preventing withdrawal. To liberate the point, the pin had been pushed downward to a new position (c) where traction again caused the point to enter the bronchial wall. This had been repeated until the pin was forced down tightly as far as it could go in the small stem bronchus of a 4 months old infant, and there anchored with what seemed utterly hopeless tightness. Of course some such rachet-like action downward occurs from cough and even respiration; but my predecessor nobly took the blame upon himself, claiming that the intruder if unmolested could not have arrived at such a condition of impaction and anchorage. The greatest difficulty arose from the fact that the forcing in of the pin together with the edema left no room at the side of the pin to work. Any instrument inserted would need to make room for itself by displacing the edema and the utmost care would be necessary to prevent perforation of the bronchial wall by the instrument or the foreign body. In addition to this it should be remembered that the stem bronchus of a child of this age is not over 3 millimeters in diameter. (Fig. 10.) It seemed as though bronchoscopy had once more encountered the impossible. To pull the intruder out at all hazards would certainly have been promptly fatal, and was not to be considered for a moment.

The method finally worked out on the manikin is shown schematically in Fig. 7. The fine, bent probe, B, was formed to the proper curve to be insinuated by rotation to the position shown. Then by gently turning the bent probe, at the same time making gentle pressure with the fixing push rod, C, the pin was closed. This rendered forceps withdrawal safe and not difficult. No anesthetic general or local was used. The child made a good recovery and has remained entirely well.

Part of the inconceivable difficulty here presented was in the small size of the trachea and bronchi in an infant of four months, coupled with the limited time that it is safe to continue working. The main bronchi are not larger than a goose quill and to stretch them by forcing in a large tube is certain death. The lumen diameter at four months of age is not more than half what it is at twelve months.

My predecessor in this case asked that mention of his name be omitted in order that I might feel absolutely unhampered in fully stating the case so that others might avoid committing the error of pursuing a foreign body downward.

For use in the esophagus, forceps may be substituted for the fixing rod.

CONCLUSIONS.

1. Tool-steel probes formed by the bronchoscopist himself, to suit the particular case, are an addition to our means of solving mechanical problems of bronchoscopic foreign-body extraction.
2. The form herewith shown can be used to close a bar pin, which cannot be done with any of the different forms of safety-pin closers.
3. To pursue a foreign body downward is to court disaster.
4. Care is necessary to avoid forming hooks that could catch in bronchi or become entangled in the foreign body. The shape should be such as to favor "unscrewing" out if caught.
5. Great care should be taken to avoid injury to the patient. Any number of trials may be had if no harm be done. One serious trauma may terminate the case.

FURTHER OBSERVATIONS ON TRACHEO-BRONCHIAL DIPHTHERIA, WITH REPORT OF ADDITIONAL CASES.*

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Since my last report on this subject† diphtheria cases have not been prevalent in New York City and during the summer months of 1916, for the first time in the history of the institution there were no intubated cases admitted to the Willard Parker Hospital, the severe epidemic of poliomyelitis apparently having taken the place of diphtheria and the exanthemata. During the year preceding there was also a small percentage of tracheobronchial diphtheria even though there were many admissions to the hospital. All of the cases were mild and many of the "croup" cases recovered without intubation after a large dose of antitoxin. The writer has stated in former papers on this subject that he does not consider a case tracheobronchial in whom the intubation tube of Dr. O'Dwyer relieves the stenosis. It is only those cases with membrane below the tube causing obstruction to respiration that he considers tracheobronchial clinically and which call for bronchoscopic measures to relieve the obstruction. There were, however, a few interesting border line cases with diminished respiratory murmur and increased resonance over the affected lung. One of these cases had an encapsulated empyema that had ruptured into the superior lobe bronchus which Dr. Ferguson of the attending staff had aspirated by needle with negative results. It was completely cured by aspiration bronchoscopically, a dram of pus showing pneumococci being removed. Another case, an infant with markedly bulging right chest wall in comparison to the left chest, which was apparently collapsed, and who was in extremis and died five minutes after admission was found by post-mortem bronchoscopy to have an impacted hull of a pistachio nut imbeded in the right bronchus. Another case had a safety pin in the right bronchus. It was not diphtheria and the patient recovered after the removal of the pin. Still another case was admitted with the history of having aspirated a foreign body (a piece of egg shell) which proved to be tracheal diphtheria. We are constantly on watch for tracheo-bronchial cases. Dr. Gover of the Resident Staff examines all of the cases showing respiratory difficulty by direct means and he feels that he can practically foretell from the appearance of the larynx and subglottic edema the cases that require intubation and the cases that do not require it. He has also gathered some very valuable data about the condition of the larynx as well as the physical findings in these cases and after further study will make a report on this subject.

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*Read before the American Laryngological, Rhinological and Otological Society, Atlantic City, June, 1917.

†The Laryngoscope, October, 1916.

There were also admitted some very interesting cases with bilateral bronchopneumonia intubated before admission for supposed laryngeal and tracheobronchial diphtheria and reported as such; these proved on examination by direct inspection to have no involvement of the larynx, trachea or bronchi, and when detubated promptly remained without the tube. I am truly happy that Dr. Gover has taken such an interest in the study of the cases, for it is very essential to have careful data on these cases in order to prove which are diphtheritic from the presence of clinical evidence of membrane, and which are mistaken for diphtheria and wrongly diagnosed. We have seen no untoward effect on any of these children suffering with pneumonia, and after bronchoscopy and suction the child was apparently breathing much more comfortably than before the examination.

In the selection of the bronchoscopic tubes for examination we have adhered to an old rule of the writer to use the smallest size tube possible when performing intubation and not be governed by the age of the patient in the selection of the tubes. Therefore, the bronchoscopic tubes most frequently used on these children are the 4 and 5 mm. tubes of Dr. Jackson. By using the small tubes one makes little traumatism and at the same time trains the eye to see and interpret objects through a small lumen which is the main essential of all bronchoscopic examination. With the larger tubes objects are easily recognized but this is not the case except by constant practice in the living with the 4 mm. tube that distant objects are discernable.

The duration of time should be taken into careful consideration. It should be the least possible duration with an endeavor to relieve the primary diphtheritic obstruction. The duration of time is extremely important as the acute diphtheritic obstruction must be removed at the first trial and if the desired result is not accomplished later bronchoscopy does not aid in the recovery of the case. So far as I have been able to judge in my limited experience with bronchoscopy aspirated food and peanut pulp are equally as irritating and fatal if not removed at the first trial. The average duration by actual time in minutes has been from five to eight minutes in children. The bronchoscopic tube may, however, be left in situ with no apparent discomfort to the patient for a period of fifteen minutes after spraying or swabbing with antitoxin. The children breathe with perfect ease and often fall asleep with the bronchoscope in situ after the obstruction is relieved. In adults the duration may be prolonged but the general condition of the patient should be taken into consideration as well as the amount of involvement of the bronchus.

In the removal of the membrane by suction or forceps great care should be taken not to cover the attached portion of the cast with the lip of the bronchoscope but to locate the uppermost part of the attachment of the membrane and follow it down to its distal attachment. I have had this difficulty arise where I could see the flapping piece of membrane which, being held to the tracheal wall by the tube, was difficult to detach *en masse*. The membrane ordinarily is stripped off from the tracheal and bronchial wall readily but in the instance I mention I had some difficulty by overriding the proximal attachment of the membrane by the lip of the tube.

In compiling statistics on these cases I have recorded all of the cases handled by the House Staff or myself even though they succumbed within a period of from 12 to 24 hours after admission. This, of course, greatly increases the mortality rate, but it is only fair to report the good results as well as the bad and then deduct the 12 to 24 hour cases showing what may have happened had the cases not been of such long duration or if they had been recognized early.

Of the case reports I have 11 to add during the years 1915 and 1916. One adult was admitted to the Willard Parker Hospital with tracheobronchial diphtheria who recovered. All of the others were children from one year to 7 or 8 years of age. Of the eleven cases treated six recovered and were discharged cured. Five died, three of them being in moribund condition on admission. One died one hour after admission. another within twelve hours, and a third in seventeen hours. The other two died from extensive pneumonia fifteen and twenty days after the removal of the membrane. The penumonia developed in one case after the temperature had reached normal on the seventh day and the child was without the tube. Deducting the cases that died within the first twenty-four hours would make a very encouraging recovery rate 75 per cent. but we do not deduct any case in whom intubation has been performed or in whom bronchoscopic examination has been made, and therefore the high mortality rate with such cases inclusive is rather discouraging. Following is a brief report of the cases:

Case 1. A. W. A woman 35 years old, ill five days, was admitted to the Willard Parker Hospital January 10, 1915, suffering with laringotracheal diphtheria. On admission the woman was in poor condition, markedly cyanotic and suffering from extreme dyspnea. She was promptly intubated with an adult intubation tube by Dr. Archibald Dickson, the resident physician, and the stenosis was temporarily relieved. Within a short time the tube became obstructed and was removed and a small cast of membrane followed. As the coughing up of the cast apparently relieved the stenosis, reintubation was not necessary and the patient breathed fairly well for one hour but gradual stenosis necessitated reintubation. During the interval that she remained without the tube a physical examination of the chest was made and a dose of 40,000 units of antitoxin administered. The physical examination was rather unsatisfactory owing to the very thick chest wall of the patient who weighed about 230 pounds. However, Dr. Dickson thought there was diminished respiratory murmur over the right lung in comparison to the left and that bronchoscopic examination was indicated. None of the other members of the house staff or myself were able to corroborate the findings of Dr. Dickson on physical examination, but the bronchoscopic examination proved that Dr. Dickson was the only one of us who was correct. The tonsils and pharynx were covered with membrane. The arytenoid cartilages were enormously swollen and the right one covered with a thick exudate. The vocal cords and ventricular bands were beefy red, the right cavity of the larynx being covered with membrane and the left free where the cast had possibly been removed by intubation. The 7 mm. bronchoscope of Dr. Jackson was introduced, as the 9 mm. tube would have been too large to pass into the larynx without causing much traumatism. On introduction of the bronchoscope a well defined cast of membrane was visible on the right antero-lateral tracheal wall extending downward. This was promptly removed by suction and the tube passed downward until the carina came into view when the membrane was seen in the right bronchus. This piece of membrane was also removed by aspiration but the suction tube became obstructed and another was substituted. The extension of the cast continued into the superior lobe bronchus and also as far down as the middle lobe orifice but did not enter it. All of the membrane was removed from the superior lobe as far as I could see. The mouth of the bronchus was much swollen. A suction vacuum of ten inches was used. The bronchial area was swabbed as well as possible with antitoxin. While swabbing with antitoxin the nurse did not tighten the sleeve on one of the Coolidge sponge holders and the gauze sponge became detached on removal and we had a foreign body added. The gauze fortunately became lodged in the mouth of the swollen bronchus and was removed. Application of antitoxin was made to the trachea and larynx and a long 13 cm. intubation tube introduced. A dose of morphia gr. ¼ and atropia gr. 1-150 was administered one-half hour before bronchoscopy. No local or general anesthetic was used. Although cocain was not used I do not think it was contraindicated. The duration of bronchoscopy was thirty minutes and the tube was left in situ for fifteen minutes longer to allow for free breathing and to remove mucous and insufflated oxygen. The patient apparently suffered from little shock and had a fairly comfortable night. The following day the temperature was 103.2° Fahrenheit, pulse 110, respiration 38. The tube was removed four days later and on removal of the tube through the direct speculum a mass of curdy digested membrane was coughed out. The larynx was free from membrane but considerable ulceration remained. No subglottic edema was noted. The tube was not replaced. The temperature gradually reached normal on the tenth day and the patient was discharged from the hospital one month later. The voice was very hoarse at the time of discharge from the hospital due to an infiltrated and fixed cricoarytenoid joint on the right side. The patient insisted on leaving the hospital and going to Atlantic City even though we advised her to remain in the city for fear of return of the stenosis. Dr. Dickson saw her three months later and reported that the arytenoid was moving and the voice was returning to normal. There were no complications. All of the cultures were positive.

Case 2. W. J., 8 years of age, ill five days, was admitted to Riverside Hospital January 28, 1915, for post-nasal, glandular and laryngeal diphtheria. The ambulance surgeon who brought the boy to the hospital did not consider intubation necessary and thought the whole trouble was due to obstructed pharyngeal croup from the enormous amount of swelling of the neck and face. A careful physical examination was made by Dr. E. M. Goldstein on admission and he noted the supposed enormous collar of brawny cellulitis to be due to subcutaneous emphysema. The neck and face were enormously puffed out with air and the ocular and palpebral conjuctivae of the left eye stood out as a large air bubble. There was but slight exudate on the tonsils but the uvula was gone and was thought to have sloughed off, but a history from the parents the following day cleared up this error. The tonsils had been removed and the uvula was probably removed with them; however, there was not sufficient exudate present to account for such clean amputation of the uvula and part of the posterior pillar of the right side.

There was a peculiar inspiratory-expiratory wheezing accompanied by a cough which was not sufficiently constricted to require intubation. The heart action was rapid but regular. A dose of 10,000 units of antitoxin was administered, 5,000 units having been administered prior to admission by the family physician.

On the 29th. the second day after admission, the emphysema and stenotic symptoms had markedly progressed and intubation was resorted to in order to relieve the condition. Dr. E. M. Goldstein, Resident Physician of Riverside Hospital, intubated by the O'Dwyer method with an 8-9 tube. The intubation instead of relieving the stenosis made it much worse and the patient was almost asphyxiated. The tube was at once removed and following it a cast of membrane was coughed up. He notified me of the condition and on arrival at the hospital I made a thorough physical examination of the patient. The boy was terribly puffed with emphysema and breathing was decidedly asthmatic. The emphysema was found to extend over the entire trunk down to Poupart's ligament. The arms and hands were also ballooned with air. The pharynx showed a thin exudate on the tonsils, the uvula was gone. The same exudate was in the laryngo-pharynx. A direct laryngeal examination showed the epiglottis to be free of exudate, nor was there any exudate on the ary-epiglottic folds. The arytenoids were enormously swollen but free from exudate. The ventricular bands and vocal cords were plainly visible, free from membrane but congested. There was apparently marked subglottic infiltration.

A 5 mm. bronchoscope was introduced and small patches of membrane and ulceration were seen below the cricoid extending down into the right main bronchus. Both bronchi were examined but no casts of membrane were seen and the exfoliated cast which had been coughed up was unquestionably the cause of respiratory difficulty. Re-intubation was not necessary.

The case is interesting from the standpoint of subcutaneous emphysema occurring in a case prior to instrumentation of any kind and I was at a loss to explain the cause of the emphysema. The boy had a rather slow convalescence due to myocardial changes and post-palatine paralysis but eventually recovered. The cultures taken were all positive.

At an autopsy which I was able to obtain in a foreign body case other than diphtheria with similar symptoms and subcutaneous emphysema I endeavored to give an explanation of the cause of such subcutaneous emphysema without instrumentation which was as follows: Rupture of the blebs through the pleura into the mediastinal spaces which in turn follows the deep cervical fasciae, and gets out into the subcutaneous celleular tissues of the body was the only plausible explanation for this condition. (See THE LARYNGOSCOPE, August, 1915, p. 574.)

Case 3. M. W. Age 20 months, ill three days, was admitted to the Kingston Avenue Hospital May 16, 1915, intubated for laryngeal diphtheria. The child was in extremis on admission and the tube was obstructed. Dr. Eberle removed the intubation tube but as there was no expiratory cough and it was very evident that the child was about dead, Dr. Eberle rapidly performed tracheotomy and removed a cast of membrane which had caused asphyxia. By means of artificial respiration the child began to breathe but this was followed by a series of convulsions and the baby succumbed one hour later. Although the heart continued to beat during the respiratory failure the profound carbonic acid poisoning was not overcome. Dr. Eberle performed a necropsy and found both bronchi obstructed by membrane.

Case 4. T. H. A boy of three years, ill 3 days, was admitted to the Kingston Avenue Hospital October 3, 1915, intubated for laryngeal diphtheria. On admission the child was in fairly good condition though there was some difficulty with respiration at times and a persistent cough. As the ambulance surgeon said there was immediate relief of dyspnea after intubation, which was apparent on admission, Dr. Thos. Joyce thought the persistent cough was due to the presence of the tube in the larynx to which the larynx had not become tolerant. There was no membrane visible on the tonsils or pharynx. A dose of 20,000 units of antitoxin was given. Two hours after admission the child became very restless and cyanotic and Dr. Joyce was hurriedly sent for who removed the tube and found it plugged with membrane. A longer tube was immediately reintroduced which gave the desired relief and the child on return to his crib went to sleep. Within an hour the tube again became obstructed and was again removed and found to be full of membrane. As I was in the hospital at this time Dr. Joyce called me to see the child who, after the third intubation, was apparently comfortable but was slightly cyanosed. On examining the lungs little air was heard entering either side and the little patient was apparently breathing with great care in order to avoid further trouble. From the history given by Dr. Joyce and the physical findings preparation was made for bronchoscopic examination which seemed to be indicated. The temperature was 102.04° Fahrenheit, pulse weak and rapid and respiration shallow. On removal of the tube the larynx was free from membrane. The 4 mm. tube was passed and immediately ran into a cast of membrane in the trachea; it became obstructed and was promptly removed. The 5 mm. tube was introduced rapidly and also passed into the cast but was withdrawn above the cast, aspiration was applied and a cast was withdrawn hanging to the end of the canula. This was pulled off by one of the nurses and the canula again applied. From the cricoid level downward as far as one could see there was a complete cast of membrane. At times the loose piece would temporarily obstruct vision by flapping into the lip of the tube and covering the light. Two small pieces were coughed through the lumen of the tube and stuck on the operator's mask. It was impossible to remove all of the membrane at one sitting so we decided to discontinue the procedure after we had worked for fifteen minutes and to give another dose of antitoxin, later removing the remainder of the membrane after the antitoxin had had its effect. The bronchoscopic tube was, however, left in situ for fifteen minutes longer to allow for free breathing followed by swabbing and intubation with a long tube. The child apparently was in fairly good condition when he returned to bed and, as he had had 1-32 of a grain of morphia, fell asleep. The same evening the child became very restless and the temperature rose to 105.2° Fahrenheit. There was difficulty with respiration and Dr. Joyce removed the tube. Respiration was much improved on removal of the tube but no membrane was coughed up. Within one and a half hours reintubation was again necessary. The unfortunate little soul was about exhausted by this time and the lungs began to fill with bubbling moist rales. The condition continued to grow worse and the child died from pulmonary edema just twelve hours after admission. No autopsy was permitted.

Case 5. W. Z., age 4 years, ill four days, was admitted to the Kingston Avenue Hospital December 19, 1915, intubated for laryngeal diphtheria. There was no relief following intubation for the tube became obstructed and was removed. Further intubation did not improve the condition and Dr. Laub promptly performed tracheotomy, removing a cast of membrane from the trachea by means of forceps and then introduced a tracheal canula. The patient's condition improved after the removal of the membrane and there was free passage of air through the tracheal canula; 20,000 units of antitoxin were given and the child put in bed. The usual stimulation of camphor in oil was given. The child continued to do fairly well for about twelve hours after tracheotomy when a piece of membrane was coughed into the tracheal tube causing obstruction. The tube was promptly removed by the nurse and a cast of membrane followed. The tracheal canula was reintroduced by the house physician who responded to the call. From this time on the child continued to grow worse and become cyanosed. The heart sounds were weak and rapid and the lungs were gradually filling with moist rales. Repeated doses of adrenalin were given but no amount of hypodermic stimulation had any effect. The unfortunate little boy lingered in this condition for five hours and then passed away just seventeen hours after admission.

Case 6. Domonick, age 2½ years, ill two days, admitted to the Kingston Avenue Hospital March 23, 1916, was intubated shortly after admission by Dr. Hook, with a 1 year O'Dwyer tube. This tube gave the relief desired and the little patient improved. A dose of 15,000 units of antitoxin was administered. The child had a fairly comfortable night but the following morning he was breathing with difficulty. The tube was removed and was followed by a cast of membrane and much bleeding. Dr. Regan gave a dose of horse serum 30 cc. intramuscularly and the record states that the hemorrhage promptly ceased. There is not a great deal of bleeding as a rule in these cases where the membrane is attached to ciliated epithelium but there are exceptions however and this was probably one of them. The child was reintubated with a 2-year tube ten minutes later. As reintubation did not seem to relieve the dyspnea Dr. Joyce notified me of the condition and on arrival at the hospital the same afternoon we bronchoscoped the patient.

There was no visible membrane on the tonsils or the pharynx as the speculum was introduced. There was no membrane visible on the epiglottis. The larynx was congested and ulcerated, and the hemorrhage recorded probably came from this region. Ulcerated areas were noticed on the passage of the 4 mm. tube which extended downward into the right main bronchus at which site there was a visible membraneous cast loosely attached which would flop into the lumen of the bronchoscope with expiration, only to be aspirated into the bronchus with inspiration. With a small suction canula the proximal end of the membrane was readily attached to the tube and a cast of the main bronchus removed with a torn and shreaded distal end. The bronchus was then examined for further membrane but none was visible below the upper lobe bronchus though the lip of the bronchus was considerably infiltrated. After the removal of the membrane the usual procedure of swabbing by antitoxin was used and a long tube introduced. On March 26, the tracheobronchial intubation tube was removed but reintubation was necessary four hours later. a 2 year O'Dwyer tube being introduced by Dr. Joyce. On March 31 the tube was auto-extubated, the same size tube being replaced. The child was in poor condition. There were scattered subcrepitant rales over both lungs posteriorly. The child continued to cough up the tube on an average of one to three times during the day but as soon as a 2-year. non-cough-up tube was introduced the condition was relieved. On April 2, the right side of the face became swollen and on oral examination a small necrotic ulcer (cancrum oris) was noted in the right buccal cavity. Smears from the ulcer showed Vincent's bacillus and spirillum in abundance. The area was treated locally with pure carbolic acid and alcohol, no salvarsan being obtainable. The oral condition continued to progress rapidly so that necrotic slough was removed by curettage and the area again painted with phenol. The unfortunate little boy continued to grow worse and the area of gangrene increased. The tube was removed for cleansing as there was marked and fetid salivation with a continual flow from the mouth as well as into the lumen of the intubation tube which caused excessive coughing at times. On April 6, a purpuric rash developed on the face and chest, septic in origin. A blood count at this time showed a general count of 15,000 with a poly morphonuclear count of 92 per cent. A blood culture, made with some difficulty by Dr. Eberle owing to the very small veins, showed a hemolysing streptococcus.

The child continued to grow worse and died on April 12, 1916, still wearing the intubation tube. Although the foreign body obstruction was removed early in the disease the many complications which are apt to follow in these cases makes the ultimate outcome extremely discouraging.

Case 7. Robt. N., age 3 years, ill two days, was admitted to the Kingston Avenue Hospital April 1, 1917, intubated before admission with a 3 year O'Dwyer tube. The child was breathing poorly on admission and Dr. Joyce, who admitted the case, also noted on physical examination that little air was entering the right lung. There was no membrane visible on the tonsils. A dose of 20,000 units of antitoxin was administered. As the dyspnea gradually became worse and the child very restless and cyanosed. Dr. Joyce removed the tube. No membrane followed the removal of the tube but the patient was much more comfortable and breathed with little difficulty. It is not at all an uncommon occurrence to have a child breathe easier without the tube especially when the end of the lumen of the tube is covered by a loose piece of membrane. About six hours later, owing to gradual contraction, reintubation was necessary, a longer tube being introduced by Dr. Joyce which seemed to pass the obstruction and give the desired relief. The child remained fairly comfortable with the long intubation tube in situ until the following morning when dyspnea and cyanosis became marked and the tube was promptly removed. With the removal of the tube the distal end was found completely obstructed with thick curdy material, probably digested membrane. The child again remained without the tube and breathed much better after its removal, but later reintubation was necessary, the short 3-year O'Dwyer tube being used. When I saw the child the same afternoon there were definite signs of obstruction below the tube, viz., prolonged inspiration and shortened expiration, accompanied by the ever present blocked cough. There was diminished respiratory murmur over the upper lobe of the right lung; the left which was perfectly free although the respiration was exaggerated. There were few rales. The temperature was 102.4° Fahrenheit, pulse 128, respirations 38 and labored. There was moderate cyanosis.

On direct inspection the tonsils were free from membrane. The epiglottis was not involved but the arytenoid cartilages were red and swollen, which could be accounted for by the frequent intubations. On removal of the tube the larynx was seen to be congested and the ventricular bands and vocal cords red and swollen. There was no membrane visible. The 5 mm. tube of Dr. Jackson was introduced which promptly encountered membrane, moving to and fro with every respiratory effort, in the trachea. With the small aspiration tube and a vacuum of from five to ten inches the membrane was removed, the attachment being made at the loose distal extremity, care being taken to see that the cast was not held by the lip of the tube to the tracheal wall. With suction a cast, 3½ cm. in length, which was part cylinder and torn cast was removed. The main bronchus and also the upper lobe and stem bronchi were examined, but aside from small areas of ulceration no further membrane was seen. The ulcerated areas were swabbed by the usual antitoxin gauge sponge. A long intubation tube was introduced. The temperature rose following the manipulation which had been by the watch exactly eight minutes, but the child was breathing much more comfortably and soon was asleep. The following day Dr. Joyce reported that there were many scattered rales over the right upper lobe of the lung involved but that the child was fairly comfortable and taking nourishment well. The temperature remained high, 104.2° Fahrenheit, and the pulse and respiration rapid. On April 5, the long tube was removed by direct detubation and much curdy digested material followed the removal. The child did only fairly well without the tube for thirty minutes when reintubation was necessary the O'Dwyer tube being introduced. The temperature fell to 101° Fahrenheit the day following the removal of the long tube and reached normal by the end of the week. A second attempt was made to remove the tube by direct means but reintubation was immediately necessary owing to the swollen arytenoids. On April 10, the child was in remarkably good condition but was still unable to remain without the tube. There was not sufficient subglottic infiltration to cause the immediate reintroduction of the tube and therefore the larynx was not cauterized. There was marked adductor spasm, which could be plainly seen, both of the ventricular bands and cords. Such spasms are most frequently the cause of false passages and are even met with to-day when forcible attempts to intubate are made by the hand of the unskilled intubator. Like all spasms encountered in laryngeal or esophageal tubage the operator who waits for the spasm to relax will do no harm to soft parts, but the over-anxious beginner who is anxious to put his first tube in the larynx, frequently uses such force in the attempt at intubation that he not only ruptures the soft parts and makes a false passage into the mediastinum which invariably has as a sequal to his faulty manupulation a fatal termination from mediestinal penumonia.

We, therefore, wait for the spasms to relax, especially when the tube is inserted under the direct guidance of the eye, thereby avoiding traumatism and the fatal false passage. Although we had cured the patient of the acute diphtheritic condition we were unable to remove the tube for any length of time. On April 21, the tube was removed and as no immediate spasm followed the child was returned to the crib, breathing well without the tube. This was very encouraging and we thought that at last the child would remain permanently detubated, but such was not the case as Dr. Joyce reintubated him four hours later. We then decided to leave the tube in for one week before disturbing it, for the child had become extremely nervous and frightened at the many attempts at the removal of the tube. On April 28th, the tube was again removed by direct means but the inevitable reintubation had to be done a few hours later. Dr. Joyce, who had given the little child such constant attention, thought that the direct detubation may be the cause of the trouble as the child had become frightened by so many direct examinations and furthermore he argued that even though the removal took not over a minute, the instrument may be the cause of supraglottic edema which I had not seen as I had invariably left the hospital before reintubation was necessary. He therefore suggested that he take the tube out some morning early by the O'Dwyer method and see what happened. He accordingly removed the tube on May 1, and reintubation was not necessary. The child made a perfect recovery. The patient was detained in the hospital for one month after the last removal of the tube to make doubly sure that there would be no recurrent stenosis. He was discharged cured May 31, 1916. This case is interesting from the standpoint of frequent direct examinations being the cause of supraglottic edema as suggested by Dr. Thos. Joyce of the Resident Staff. No doubt, prolonged direct examination will cause this condition and does cause supraglottic and arytenoid edema much more often than we suppose; but here is a case with supraglottic and arytenoid edema when examined for not over one minute at any sitting. Most of our cases have been cured after direct methods were resorted to but this case was the interesting exception and was only permanently cured after the skillful digital removal of the tube by Dr. Joyce.

Case 8. Martin S., age one year, ill three days, was admitted to the Kingston Avenue Hospital March 28, 1916, suffering from laryngeal diphtheria. The throat was congested but there was no visible exudate on the tonsils. The child was able to cry, showing that there was no involvement of the larynx, but there was marked retraction at times. A dose of 15,000 units of antitoxin was administered, 5,000 having been given just prior to admission to the hospital. The little child had spells of marked dyspnea and eight hours later, on account of the pulse becoming aspirate, that is, disappearing with each inspiration, the child was intubated, a 1-year tube being used. After intubation the respiratory difficulty became worse and the tube was promptly removed and a longer tube inserted by Dr. Adam Eberle, which gave temporary relief. Within two hours this tube became obstructed. It was removed and a small piece of membrane followed. The child breathed much better without the tube for over one hour when respiration again became difficult and reintubation was performed with the long one-year tube. On arrival at the hospital a physical examination was made. There was marked retraction even with the tube in situ. Little air was entering the right lung and by inspection the right chest was barrel-shaped. The intubation tube was removed and the 4 mm. bronchoscopic tube of Dr. Jackson introduced. No membrane was visible in the congested larynx, but on introduction of the bronchoscope membrane was plainly visible and very white just at the bifurcation with extension into the right main bronchus.

With a small suction tube the plaque of membrane was removed from the trachea. After the removal of this parietal plaque from the trachea and bronchus further membrane was not seen. The area was swabbed with antitoxin and as the respiratory difficulty was relieved we did not introduce the long one-year tube as is usually the custom after the removal of membrane. However, reintubation was necessary before I left the hospital, a one-year short tube being inserted which separated the subglottic edema and gave prompt relief. There was a sharp reaction following the bronchoscopic manipulation and the temperature rose to 103.8° Fahrenheit. The following day Dr. Eberle thought he could elicit a definite area of pneumonia over the right upper lobe anteriorly which was probably a diphtheritic pneumonia. The pneumonia, however, gradually improved and April 6, the temperature was 100°. From this time on the general condition of the child improved and he made a perfect recovery. The tube was removed and reintroduced six times before the patient finally remained without the tube. The little patient was discharged as cured May 13, 1916.

Case 9. Gussie W., age 7 years, ill three days, was admitted to the Kingston Avenue Hospital April, 1916, for laryngeal diphtheria. An attempt to relieve the dyspena by intubation was performed by the ambulance surgeon at home, but as the tube made the dyspnea much worse he removed the tube and rushed the child to the hospital. On admission Dr.Hook of the Resident Staff intubated the child but there was no relief and the tube became obstructed with membrane. Further attempts were made to relieve the dyspnea with longer tubes but without success. Dr. Adam Eberle was called and owing to the extreme condition he did not attempt further intubation but promptly performed tracheotomy. On opening the trachea Dr. Eberle removed a cast of membrane and the condition of the child improved. The temperature after the manipulation was taken and found to be 105.2°, respiration 54, pulse 150. Heavy doses of camphor in oil hypodermatically were given, and later, after the child reacted, 25,000 units of antitoxin were injected intramuscularly. The child had a fairly comfortable night but became very restless and dyspneic the following morning and Dr. Eberle notified me of the condition A physical examination before attempting bronchoscopy was of little aid as the constant coughing and rattling of mucus in the tracheal canula rather distorted and magnified sounds elicited by auscultation. However, there was increased percussion resonance over the right upper lobe, the lung which proved later by bronchoscopic examination to be obstructed by foreign body membrane. There was no involvement of the tonsils or pharynx, which were viewed on introduction of the speculum, though there was a slight nasal discharge. As the larynx came into view the tracheal canula was removed. A rapid view of the larynx showed it to be free from membrane but congested from the many intubations. The 5 mm. Jackson bronchoscope was introduced. As Dr. Eberle had removed a cast the night before no membrane was encountered until the carina trachialis was reached when a loosely attached proximal end became visible. This piece of membrane was easily removed by suction on account of its loose attachment and when removed through the tube measured a little over 2½ cm. in length. The cast was a cylinder with a torn and fringed distal end. On further examination of the bronchus it was noted that the mouth of the right superior lobe bronchus was still occluded. This membrane was rather firmly attached and suction only removed very small pieces of it, but with the curved forceps of Dr. Jackson the membrane was grasped and a torn piece 1½ cm. in length was removed. As the child did not stand the manipulation well the bronchial area was rapidly swabbed with antitoxin by means of a Jackson sponge and a long bronchial intubation tube introduced. The tracheal wound was lightly packed with plain gauze and a wet dressing applied. The child was very restless during the night and was given small doses of morphia 1-32 of a grain every six hours. The next day, April 17, the child was slightly improved and the temperature had fallen to 103°, though cyanosis was marked. On April 18, the bronchial tube was removed. No attempt had been made to close the tracheal fistula which was left open as a safety valve though it had been loosely packed with a gauze plug and a small adhesive plaster dressing on the neck. There was a profuse discharge from the tracheal wound the following day and the dressings had to be frequently changed. Dyspnea and cyanosis were marked at times and there was almost complete consolidation of the upper lobe of the right lung—a dyphtheritic pneumonia. Suction was applied from time to time through the open tracheal fistula and as the child seemed to breathe better without the tracheal canula and owing to the profuse tracheal discharge which constantly plugged the canula it was dispensed with. On April 24, owing to the dried muco-pus causing extreme dyspnea and cyanosis, Dr. Joyce reinserted the tracheal canula and by suction removed much of the obstructing secretion. Later he removed the canula only after it became obstructed and inserted a long intubation tube. Much secretion was coughed through the intubation tube and dyspena again relieved for the present. Within two hours the intubation tube was removed as it became obstructed and the long cane-shaped tracheal canula of Dr. Jackson once more introduced. The unfortunate little patient lingered in this terrible state with constant obstruction to respiration and frequent changing of tracheal canula and finally succumbed on April 28, 1916.

This case demonstrates the unfortunate outcome when the diphtheritic membrane is not entirely removed at the first attempt. No doubt the finer bronchi were involved which accounted for the extensive pneumonia which is in fact pathologically a necrosis of the lung. Such cases are not at all unlike foreign body types other than diphtheria membrane, such as peanut and carrot pulp These substances as you all know are extremely irritating when in the lung and if not removed at the first attempt the case frequently terminates fatally from diffuse bronchopneumonia or abscess of the lung.

Case 10. L. W., age 5 years, ill four days, was admitted to the Kingston Avenue Hospital April 15, 1916, suffering from laryngeal diphtheria and was intubated by Dr. Frick of the intern staff twenty minutes after admission. As the tube gave immediate relief no one suspected that there was membrane below the tube which was to give trouble later. A dose of 20,000 units of antitoxin was administered. The pharynx was congested but no membrane was seen. There was no nasal discharge. A rather superficial physical examination of the chest was made which showed scattered subcrepitant rales over both lungs. Scattered tubal transmitted subcrepitant rales are not at all uncommon in all intubated cases; no note was made, however, of diminished respiratory murmur.

The following morning at 8:15 o'clock, just twelve hours after admission, the tube became blocked and was immediately extubated and promptly reintubated. There was some difficulty in reintroduction of a 4-5 O'Dwyer tube with which the boy was originally intubated and a tube of one-year size was introduced which gave no relief. Dr. Eberle was called and promptly removed the small tube and reintubated with a 4-5 tube without difficulty. Dr. Eberle notified me of the presence of membrane below the tube and the same afternoon we bronchoscoped the patient. No membrane had been expelled after the frequent extubations and reintubation was immediately necessary. A physical examination by comparison of both lungs showed by auscultation that little air was entering the right lung. The percussion note was higher in pitch over the right upper lobe in comparison to the note over the other portion of the lung, both anteriorly and posteriorly. By direct inspection the intubation tube was removed. The larynx was free from membrane but was very edematous and there had apparently been much trauma in the region of the right ventricular pouch, which probably accounted for the difficult reintubation after the tube had become blocked about twelve hours after admission. The 5 mm. bronchoscope was introduced and membrane was readily seen about 2 cm. below the cricoid level. The membrane was removed by suction, the cylinder cast being 3 cm. in length. The right bronchus was examined and there was considerable edema and some small ulcerations where the cast had been attached. The membrane had also involved the mouth of the right superior lobe bronchus and a few small shreds of membrane were removed from this region. The left bronchus was not involved. The usual application of antitoxin swabbing was made to the involved area, and a long tracheo-bronchial tube introduced. The boy became very restless and delirious following the removal of the membrane which had taken just seven minutes, and the temperature rose rapidly to 105°; the pulse was imperceptible, and with extreme syanosis and rapid respirations the outlook was very discouraging. The temperature continued to rise, which is often the case just before demise, and reached 105.6° at midnight. However, there was a suddent change for the temperature began to fall during the early morning hours together with the respirations. The pulse was still weak and rapid. The next day, April 17, at 4 p. m. the long tube was removed. A curdy mass was coughed out following its removal. Three hours later dyspnea became urgent and Dr. Eberle intubated with a 4-5 O'Dwyer tube. This tube was auto-extubated fifteen minutes later and the patient was reintubated by Dr. Frick with a 6-7 tube. The tube was again coughed-up one hour later and the same size tube was reintroduced by Dr. Frick. On the afternoon of the 18, as the temperature was falling, the tube was removed by direct inspection to ascertain the cause for reintubation. There was supraglottic as well as subglotic edema, and the arytenoid cartilages were about three times their normal size. Because of these findings we decided not to interfere with the tube for at least one week and give the larynx a rest. This seemed impossible as the tube was repeatedly coughed up and ceased only after a 4-5 non-cough-up tube of the writer's model was introduced. The non-cough-up tube was not disturbed for five days and was then removed only after inspection of the arytenoid cartilages to see if the infiltration had subsided. On removal of the tube ventricular band and vocal cord spasm necessitated immediate reintroduction of the tube. The boy was at this time in fairly good condition and had recovered from the tracheo-bronchial diphtheritic attack but was unable to remain without the intubation tube. When the regular tube of Dr. O'Dwyer was introduced it was promptly coughed up, and the only tube that would remain in situ was the bulbous tracheal non-cough-up tube. On April 28, after having coughed up the regular O'Dwyer tube four times, a small swelling was noticed in the cricothyroid region of the neck and recognized as a begining peri-laryngeal abscess complicating perichondritis at the cricoid level. The neck was poulticed and when the abscess came to the surface it was incised and drained. The following day tracheoscopy was performed and ulcerations were seen at the cricoid level. No pus was draining into the larynx from the abscess cavity. On May 6, extubation was performed by Dr. Cannon, the Resident Physician, but immediate reintubation was necessary, the 4-5 non-cough-up tube being used.

It is an interesting fact that all of the cases of chronic laryngeal stenosis following diphtheria have similar histories of frequent auto-extubation during the first two or three weeks of the disease. On the other hand, however, we frequently meet with cases who wear the tube from four weeks to four months and subsequently are detubated permanently even when special laryngeal measures are not resorted to as an aid to detubation. During one year we had sixty-eight cases of the sub-acute type, as I classify them, and all of them made recoveries. Not one of this group became chronic. This, therefore, is the reason why we wait to see whether the case is to be chronic rather than perform tracheotomy, etc., when such procedure is not absolutely indicated as many of the cases of this type recover, as I have already stated, without any special surgical measures. This case unfortunately became one of the chronics, and at the time this paper was read had worn tubes of special size and shape off and on for a period of one year. Repeated laryngeal galvano-cautery knifing and puncture have been made to the subglottic region and reintubation with soft rubber covered intubation tubes after cauterization. The boy has a remarkably good voice even after tubage of such duration and at the present time, April 15, 1917, seems to be apparently cured as he breathes well and has remained without the tube for a period of two months. We do not consider, however, any case as cured until the child has been detubated and is breathing well for at least a period of two years. Of course we are all hopeful that a cure has been affected but until the lapse of two years we shall not consider him cured. While the latter part of this history has no direct bearing on the title of the paper it is extremely important to report what does happen in some of these severe cases that recover and also to impress the fact that it is the inevitable nature of the pathological process at the outset of the disease which later is followed by the production of chronic cicatricial tissue.

Case II. V. M., age 2 years, was admitted to the Willard Parker Hospital with a history of having aspirated a piece of egg shell three days prior to admission. The family physician who was called to see the child thought he was suffering from laryngeal diphtheria and notified the Health Department. As the child was dyspneic and required surgical care the parents were persuaded to send the child to the hospital. On admission to the hospital the family physician informed Dr. Grover of the history of the foreign body egg shell and further stated that the case was not one of diphtheria and he had changed his opinion after he had examined the larynx with a speculum and seen the foreign body. With this history at hand Dr. Grover examined the larynx with the infant speculum of Dr. Jackson and saw a small white substance at the level of the cricoid which he thought may be either egg shell or diphtheria membrane. As he did not wish to pass a bronchoscopic tube before I had seen the case, and as he knew that I was expected at the hospital he very kindly left the task to me to decide the nature of the intruder. Through the direct speculum the same object was seen as noted by the family physician and Dr. Grover and both were eager for an opinion. The picture presented was not unlike many others and was thought to be diphtheritic membrane. The 4 mm. bronchoscope was carefully introduced and as it encountered the object it was very evident that it was not egg shell but diptheria with which we had to deal. The small tracheal plaque was removed by suction and swabbing, a dose of 10,000 units of antitoxin administered and the child placed in the laryngeal ward. Intubation was not necessary, and the child made an uneventful recovery. Pharyngeal cultures were negative, but cultures made from the membrane showed Klebs-Loeffler bacilli.

A review of the cases demonstrates the fact which Dr. Chevalier Jackson has so often called attention to, that bronchoscopy and esophagoscopy can be performed without anesthesia, local or general, on adults as well as on children. Again, a patient without general anesthesia is much more of help than a hindrance to the operator and the operator loses no unnecessary time for there is no tendency to prolong the operation as it may be under general anesthesia. Of course no case of diphtheria should ever be anesthetized for the removal of membrane. The profound carbonic acid poisoning from which all of these patients suffer makes a very good anesthetic for those who wish to satisfy their minds that general anesthesia is necessary. With the relief of this condition the child quickly returns to a normal state. Case 1 demonstrates the fact that an adult of 230 pounds can be easily bronchoscoped and the tube remain in situ for thirty minutes with practically no discomfort to the patient. In this case as in many of the others small doses of morphia and atropia were used. These drugs, more especially morphia, is the very best heart stimulant we have for this disease. Secondly, the atropia removes the greater part of the secretion which without it is often profuse. No doubt the accident in loosening the swab on removing the carrier has occurred many times before, but it does not happen since the long screw shoulder was added by Dr. Jackson. Case 2 demonstrates very forcibly the valve-like action of the loose membrane in causing over-distention of the lung with subsequent rupture of the alveoli and general subcutaneous emphysema, even when no instrumentation whatsoever has been attempted. It will also be noted that some of the moribund cases drowned in their own secretions. This was unfortunate even with continued suction. The profound carbonic acid poisoning and diphtheritic toxaemia were also responsible. In two of the cases there was some difficulty in removing the membrane as the distal end was detached and flapping into the mouth of the tube while the proximal end of the cast was held tightly by the tube to the tracheal wall. This was in reality an overriding of the foreign body by the tube, which has so often been called to our attention that this error in technic should have been avoided.

The child with membrane causing obstruction below the distal end of the intubation tube will often when extubated breathe far better than when the tube is in situ. They will also regulate the amount of air taken with each respiration and breathe as quietly as possible. This is quite a common occurrence and we have often recorded this shallow respiration as an endeavor on the part of the child to prevent coughing. On the other hand, when the membrane obstructs respiration there are violent spells of coughing accompanied by urgent dyspnea.

Case 7 demonstrated that direct extubation may cause supraglottic and arytenoid edema even when performed rapidly. This case was unable to remain without the tube when it was removed through the speculum, and even when no infiltration was seen at the time of removal. At the suggestion of Dr. Thos. Joyce the tube was removed by the digital method. The patient remained permanently detubated after removal and had not even the slightest dyspnea or stenotic cough.

It is obvious that it is necessary to remove all of the obstructing foreign body membrane at the first attempt, but often this is impossible and the unfortunate child dies later of necrotic diphtheritic pneumonia.

In the tracheotomised cases in this series the same result followed as in all of my cases tracheotomized for the relief of tracheobronchial diphtheria; that is, they all terminated fatally. Of course all of these cases were moribund with the exception of case 9, who lived for thirteen days. All of the membrane was not removed from this child at the first attempt and the fatal result was due to necrotic pneumonia.

We have had a number of cases with foreign bodies admitted for diphtheria and treated for this disease in the hospital and the cause was discovered only after Dr. Gover or myself had made a direct examination of the larynx and trachea. The exception to the rule is case 11, who was admitted with a definite history of a foreign body and by direct inspection was definitely proven to be suffering from tracheal diphtheria.

127 West Fifty-eighth Street.

EPITHELIOMA OF THE MIDDLE EAR AND MASTOID; REPORT OF A CASE.*

Dr. F. A. Burton, San Diego, Cal.

The purpose of this paper is to present for your consideration and discussion malignancy of the middle ear and mastoid, giving in this connection, however, the experience of others to a greater extent than that of my own, which is limited to one case.

The only thing I can add to the literature on this subject is the report of an unusual case of epithelioma, probably beginning in the middle ear, extending to the mastoid and later into the cerebellum.

In the investigation of cancer during the last two decades very extensive experimentation has been made. The net results, however, appear to be that of proving the insufficiency of all theories that have been advanced up to the present time. Of the nature of cancer probably it might be said that there is scarcely a working explanation.

Through recent experimental investigation much light has been thrown upon factors which predispose to cancer, but the certain cause of cancer is yet to be discovered. Chronic irritation has been found to be a frequent predisposing factor. It is important that we realize that cancer may grow in either one of three ways: With cells in solid cords and masses (the most characteristic and usual way), or as an adenoma or as a papilloma.

Malignancy of the middle ear and mastoid is extremely rare, there being reported in the literature, as far as I know, less than fifty cases. Epithelioma is more common in older, and sarcoma in younger individuals. Story reports that during seventeen years on the staff of the largest aural hospital in Ireland, where 1,000 new ear cases are seen annually, no case of malignancy of the ear had been observed. Malignancy may follow long continued ear suppuration. Schwartze, however, is quoted as saying that it usually attacks a perfectly healthy ear. Politzer tells us that the most frequent point of origin of epithelioma of the ear is the auricle and the external meatus. Bezold, in observing 20,000 ear cases, found carcinoma but four times. In recent years, however, a greater proportion of such cases has been reported, due, no doubt, to the increasing use of the microscope. Satisfactory explanation for the infrequency remains to be determined, but among the probable reasons are the marked degree of natural protection afforded the middle ear and mastoid; the fact that this area is practically free from glands, and that nevi, moles, warts, and allied conditions to which fatal cases of malignancy are often traceable, do not develop within the middle ear or mastoid cells. And when one considers the fact that the lining membrane of the middle ear and mastoid is made up of only one or two layers of pavement, polyhedric or ciliated epithelium, it does not seem far fetched to believe that the comparative lack of cell mass, is also a factor. Cancer may attack the auditory apparatus by extension from neighboring organs, for example, the parotid glands or the dura.

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*Read before the California State Medical Society at Coronado, Calif., April 17, 1917.

Kuhn believes that the diagnosis of epithelioma should be made only after careful consideration of the clinical course as well as the findings of the microscope. To support him in this belief, Kuhn calls attention to a case of ulcer of the external auditory canal associated with enlargement of cervical glands in which there was a diagnosis microscopically of cancer, but through being rapidly cured under mercurial treatment proved to be syphilitic. Benign growths of the ear may and do from time to time, become malignant but malignancy is not shown in a large percentage of the cases until after opening the mastoid. In sixteen cases reported by Kretschman, malignancy was not recognized in five until after operation, and out of six cases at Schwartze's clinic but three were recognized as such before operation. Bilroth has called attention to the slowness of growth in old persons and believes that rate of development decreases as the patient grows older. Of the cases reported, scarlet fever was a very frequent cause of the previous otorrhea. As a result of actual clinical experience acquired through the study of hundreds of cases occurring in different parts of the body, there is strong evidence of proof that a large percentage of severe and sometimes fatal neoplasms are traceable to what seemed to be insignificant, harmless growths, which were subjected to chronic irritation. So it is the duty of every physician and surgeon to carefully observe and advise all patients with conditions which are known to predispose to the development of cancer.

The case which I wish to report was that of a widow, aged 43, who first applied to the San Diego County Ear, Nose and Throat Clinic, November 18, 1914, for relief from pain and aural discharge of very offensive odor. There had been discharge from the right ear for about five years (cause unknown); impaired hearing for six weeks. There was pain, tinnitus but no vertigo. There was no spontaneous nystagmus; the turning and caloric tests were not made; Weber test lateralized toward the involved ear. Family history negative. For three or four years the patient had had pain in the ear; for six or seven months the pain had been very severe and the discharge had increased in amount and offensiveness. For about this same period she had noticed slight impairment in movement of the jaw and face muscles, some difficulty in closing her right eye, as well as a slight progressive loss of weight. The patient had had a growth removed from her shoulder 12 years previously, nature of growth unknown. No recurrence. Polypoid appearing growths filled the external auditory meatus and upon swabbing, bled excessively. There was very offensive profuse otorrhea; only slight pain from pressure over mastoid. *Diagnosis*: Chronic purulent otitis media with polypi. The polypi were removed with the cold wire snare. The bleeding was excessive and it was impossible to determine that all the polypi had been removed. The bleeding was controlled by gauze packing. Post-operative treatment consisted in cleansing with soda water, application of silver stick and the instillation of hot ichthol and glycerine. After the removal of the "polypi" the patient expressed herself as being somewhat relieved of pain and discomfort and said there was improvement in hearing. However, in a few days following the operation the ear refilled with polypoid appearing growths. On account of the profuse bleeding and the pain encountered on treating the ear, investigation was not satisfactory until the patient was etherized, when the probe revealed loss of posterior wall of bony canal. The free bleeding, rapid recurrence and loss of posterior wall of bony canal, made me think of malignancy. A section was removed and sent to the pathologist, who reported epithelioma.

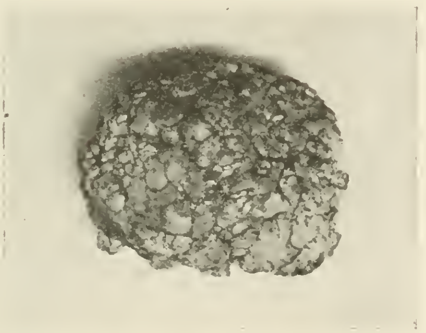

Fig. 1. Epitheliomitous mass (actual size) removed. Post-mortem.

With a diagnosis of epithelioma, the case was placed under treatment by a local roentgenologist, who believed that through the use of the x-ray he could be of undoubted service. For several hours following an X-ray exposure there was relief from pain, but the pain always reappeared and with increasing intensity. After two months of bi-weekly applications of the Roentgen rays the patient reapplied to me for relief from excruciating pain. She said she had not been able to sleep for several days and nights.

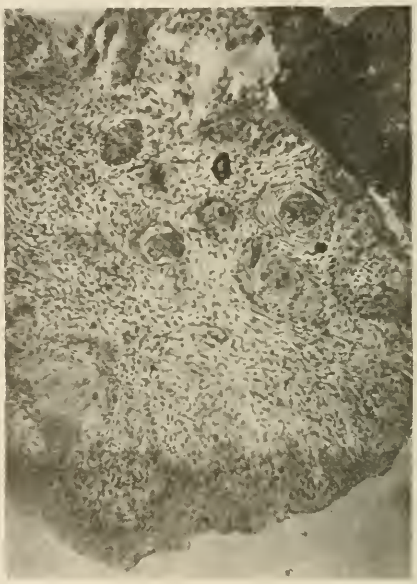

Fig. 2. Section shows a very cellular stroma enclosing several epithelial cell-masses and "pearls." There is a polygonal epithelium of variable depth on the surface, and one papilla is shown which has proliferated deep down into the mass and undergone central hyaline degeneration ("pearl").

The area over the mastoid was edematous and perforated, with some pus discharging through the fistulous openings. The patient was sent to the hospital, where the usual curved incision for mastoid operation was made, the ear carried well forward over the cheek. On removing a thin shell of honeycombed bone, a large granulation mass was exposed, but the disease showed no tendency to spread to the auricle. The wound was left open that the growth might be unconfined. The amount of cancer fluid was excessive, the odor extremely offensive. Dressings were changed daily and cleansing treatment instituted, but no treatment seemed to be of any service other than that of palliation. The free mastoid opening, however, gave great relief. It relieved the confinement of the growth as well as that of pus and cancer fluid. In the course of the disease there were three abscesses in the neck, two of which were opened externally, and one through the mouth. There was complete right facial paralysis, paralysis of right vocal band, great difficulty in swallowing. There was at no time protrusion of the growth from the meatus, as is reported in so many cases. Hearing was not lost. The lymphatic glands in the neck at no time became much enlarged or especially sensitive. Land marks of the temporal bone as well as the most of its structure had disappeared.

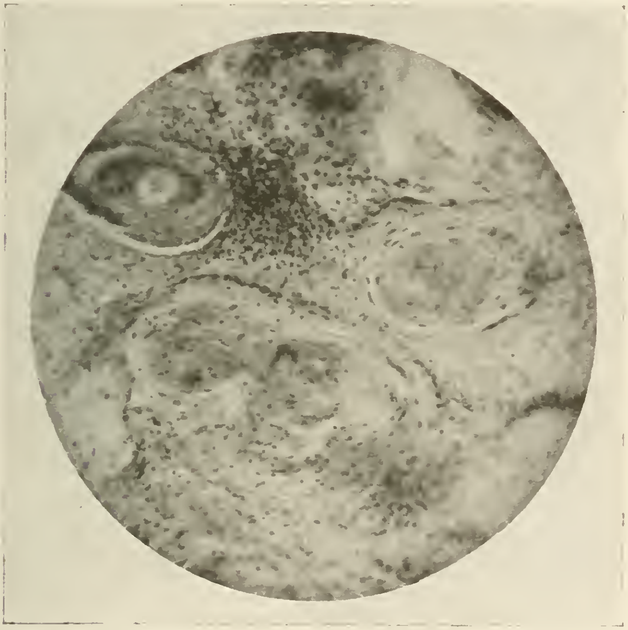

Fig. 3. A higher magnification of an area showing epithelial "pearls," one containing a giant cell, and an area of round-cell infiltration of the stroma.

In most of the reported cases there was greater impairment in hearing than in thise case. Almost without exception the patient grew rapidly worse after surgical interference. My case was no exception in this particular. In this case there was an unusually great amount of bone necrosis. In most of the cases the meninges remained intact but in mine there was extensive loss of these membranes. I had expected for some time that my patient would die of meningitis, but death occurring eight months after the first visit, was due to toxemia and exhaustion. During the greater part of the time that she was under observation, her temperature was normal, sub-normal or slightly elevated, seldom exceeding one degree above or below normal. The pulse rate was proportionately higher. Emaciation became very pronounced.

With the understanding on the part of the members of the family that no investigation would be made except behind the ear, and that the head would be left looking no worse than before autopsy, the following points were acquired: Most of the temporal bone was gone; there were no meninges covering the adjacent cerebellum; a large amount of cerebellum was macerated, the tumor was not encapsulated, and there was semi-liquid extension upward to the tentorium cerebelli and downward into sheaths of cervical muscles and vessels, as well as deep into the substance of the cerebellum toward the foramen magnum, with abundant pus burrowing in every direction. It would have been of value to have noted the condition of the blood vessels—the sigmoid sinus and termination of the cartoid—but this was not done. There was communication with the naso-pharynx by way of a patulous Eustachian tube. Permission not having been obtained, metastatic abscesses were not looked for.

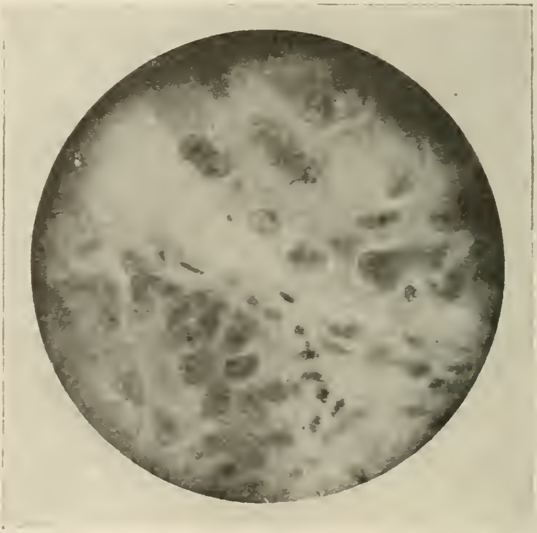

Fig. 4. A high magnification of epitheliomitous cell masses, showing cell division.

The epitheliomatous mass was dissected out and a section sent to the laboratory for re-examination. The pathological report by Dr. H. A. Thompson corresponded microscopically with that which he previously made, and was as follows: "Tumor was 2.5 cm. by 2.0 cm. by 2 cm., markedly papillomatous. Had the appearance of a typical epithelioma. Microscopical examination showed it to be made up of papillomatous masses of squamous epithelium. Cells did not show evidence of a very rapid growth, their staining being moderate and comparatively few mitotic figures being present, and some areas showed many concertic masses of epithelial cells—the epithelial pearls. The connective tissue showed marked round-cell infiltration."

In all suspected cases of cancer the patient should be given the benefit of the doubt until a reliable diagnosis can be made, and since there is not as yet a reliable sero-diagnostic test for cancer, a positive diagnosis of malignancy should not be made without a careful consideration of the clinical picture and the use of the microscope. There are many instances recorded where malignancy had not been discovered microscopically until after repeated sections had been examined.

One can but regret the fact that the public is constantly encouraged to listen to old discarded views which even to-day are continuously put forward and sometimes labeled as new, presuming to cure cancer without the use of the knife. Such representations, or shall I say misrepresentations, are likely to catch the ear of the ignorant and the timid who have acquired a fear of surgery. It is said that about eight or nine per cent of the patients operated upon for cancer, or sent to the mortuary as having died of cancer, were not sufferers from the disease.

In the early stages malignant growths of the middle ear usually look like polypi but are more ashy in color. There is often spontaneous hemorrhage, excessive and more or less persistent bleeding at time of removal, as well as quick return after removal. On touch there is more bleeding than in the case of simple granulation polypi.

In the prognosis of cancer of the ear early recognition and early radical operation are extremely important factors. In one of Kuhn's cases after the removal of the membraneous ear canal and auricle for cancer of the ear, there had been no return for six years. After malignant involvement of the mastoid cells it is probable that operative interference is contraindicated and should not be done unless for the relief of pressure symptoms.

The treatment of cancer has been assisted materially through the knowledge which has been acquired of its histo-pathology. The result has been to establish the view that in its incipiency cancer is a local condition, and that complete removal of the primary focus removes the malignant process and cures the patient. From a therapeutic viewpoint sedative and not irritative treatment should be the watchword. This is true not only where there is positive diagnosis of cancer but also where malignancy is likely to develop. There appears to be practically no place in the treatment of malignancy by means of caustics where there is hope of cure. Surely in no cases except those known to be superficial, slightly circumscribed and of slow growth. It is true, however, that even the most expert diagnostician may be unable at times, to make this differentiation. It should also be remembered that the growth may be small, apparently slight or circumscribed and yet for the reason that it has marked tendency for the formation of metastasis, be very virulent. It must be obvious that in such a case the use of a caustic which failed to destroy every vestige of malignancy before metastasis had occurred, would only augment the danger. One should also remember that an unsuccessful surgical attempt at removal, would in all probability be followed by increased rapidity of growth.

Of the sixteen cases cited from the literature by Kretschman, eleven were preceded by otorrhea of long standing. The point of origin, however, is not always capable of being determined because of spread of the growth when cases are first seen. If the tumor is of a glandular type one can say with comparative certainty, that it originated from the ear canal, as the existence of glands in the mucous membrane of the tympanic cavity has not yet been proven. In determining the nature of tumors the clinical course should be considered, as the microscopical examination is not reliable enough to depend entirely upon it. Marked head congestion during the progress of cancer of the middle ear or mastoid suggests a rapid vascular obstruction and should be looked for.

Carcinoma may spring from the external ear, the middle ear or the mastoid cells but from cases on record it would seem that irritation, due to the presence of pus, plays an important role, as the vast majority give a history of long-standing otorrhea. By long continued irritation from pus, or chronic eczema, there is a favorable nidus for the development of malignancy. The literature shows that cancer often reaches the dura but seldom perforates it. And but few cases of metastatic tumors with the ear as a primary focus have been reported.

One should make a microscopical examination of pathological structures in all cases of chronic otorrhea occurring after middle life which show a tendency to recur, and the question of the origin of a malignant growth should be promptly deterrmined on account of the possibility of extirpation in cases diagnosed early.

404 Watts Building.

VINCENT'S ANGINA.*

DR. FRANK CARROLL, Cedar Rapids, Iowa.

Vincent's Angina, is the local manifestation in the throat and mouth of a disease caused by the fusiform bacillus and spirillum bearing Vincent's name. Various other names have been given to this infection, such as ulcerated stomatitis, ulcerous angina, diptheroid angina, etc. The discovery of the fusiform bacillus is not a new thing as F. Y. Clark described such a bacillus as far back as 1879, while Miller described the bacillus and spirochete in his work on "Bacteria of the Mouth," written in 1883. In the *Lancet* of April 14, 1888, Lingard and Batt described an affection of the tongue and mucous membrane in calves which strongly resembled Vincent's angina, while in the same journal and in July of the same year, Lingard found a bacillus forming long threads in calves, monkeys, horses and in man. The credit of reporting the first cases of Vincent's angina in man probably belong to Rauchfuss, who, in 1893, reported a number of cases in the children's hospital in Petrograd. He described the bacteriology and published photographs of the bacilli and spirilli, now identified as Vincent's angina. Others described the same thing at about the same time, but it was not until 1896 that Vincent published a full description of the fusiform bacilli and the spirilli in hospital gangrene and called attention to the presence of these organisms in certain ulcerative anginas. Although more or less was known in Europe of Vincent's fusiform bacillus and spirillum from the time of Rauschfuss' first report in 1893 up to 1905, a period of twelve years, yet at this time, Vincent, writing in the *Lancet,* mentions but two articles by Americans, and over eighty by Europeans. In the *Journal American Med. Assn.* of July 23, 1904, Crandell reported what he assumed to be the third case in the United States. More recently numerous articles have been published in this country, notably by J. J. Richardson, W. Wingrave, Gerhard H. Cocks, J. Z. Bergerron, and others, so that knowledge of this disease is becoming more general.

Etiology. Although this disease is found among all classes, yet its most frequent occurence is among those who either live or work among unsanitary conditions. The disease is more common among ill-nourished people and frequently follows diphtheria, scarlet fever, etc. Any ulceration, especially if deep or of a gangrenous nature of the tonsils or mouth in the late stages of diphtheria or scarlet fever, should be looked upon with suspicion and examination should be made for the fusiform bacillus and spirillum. Many times these deep ulcerations are caused by the streptococcus, but when deep and necrosing, are liable to be caused by the fusiform bacillus and spirillum. Many things may predispose to Vincent's angina, such as dental caries, or any septic condition of the teeth or alveolar process, lymphoid tendencies, degenerated tonsils, trauma, and some say mercurial stomatitis. Excessive use of tobacco is said to aid in the development of the disease, and naturally, any uncleanliness of the mouth will hasten its development. The disease need not necessarily begin in the throat, but may appear as a small ulceration on the gums or inner side of the teeth. There is nearly always the formation of a membranous exudate on the part involved. There is usually an extension to the neighboring gland and the constitutional symptoms are often grave. A great many times cases are diagnosed clinically as diphtheria when a laboratory test would prove the Klebs-Loeffler bacillus entirely absent. The disease has been considered rather rare, but authorities now concede that it occurs more often than was supposed and a great many times more frequently than is recognized. The disease occurs more often in males than in females and usually before middle age is reached.

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*Read before the Sioux Valley Eye and Ear Academy, Jan. 23, 1917.

Many cases go unrecognized even in large hospitals, where the means are at hand for proper laboratory tests. This is owing to the fact that often times, only cultures are made. As compared to the number of cases of membranous or ulcerative throat cases, in a large hospital, but a small percentage prove to be Vincent's angina. Some hospitals give as low as one-half of one per cent, while others as high as 33 per cent. This great variation suggests that there must be something faulty with the diagnosis, or that in a given period the disease is much more prevalent. Major Chamberlain states that very nearly 50 per cent of the mouth and throat ulcers, occuring in the Philippine Islands, show the fusiform bacilli and spirochete in great or less number. Koplik also reports large numbers found among the patients of the Mt. Sinai Hospital in New York, who were suffering from gangrenous affections of the mouth.

Contagion. This disease has been reported as transmissible and a number of good authorities have reported contagion, but such contagion is due to close contact, as the common use of eating or drinking vessels, or carlessness by an attendant in the use of surgical instruments. Todd of Minneapolis, reports the case of a pathologist who contracted the disease during an epidemic in an insane asylum. One epidemic is reported in which the contagion was due to the common use of a tobacco bag, each smoker drawing the string together with his teeth. Green, in the *New York Med. Jour.* of September 6, 1913, reports a number of cases of contagion, all due to a matron in a nursery, feeding cihldren with the same spoon. Cases of infection by the patient of other parts of his own body, are also reported. One of a man, who infected a hand by biting his nails. Dr. S. McCall Hamill issues a warning in the use of anti-toxin in diphtheria and states, that at times the organisms of Vincent's angina exist in the mouth and become virulent during the lowered resistence following the use of anti-toxin. He, however, recognizes the contagious character of Vincent's angina and mentions the case of a physician who had a severe attack after an infected child had coughed in his face. Many physicians think that this disease should be made reportable.

Pathology. Vincent describes two forms of this disease. The first characterized by the pseudo-membrane, which resembles diphtheria very much. It begins with a slight pharyngeal pain and a small whitish spot, at first scant, then thicker, and this enlarges and rests on the red and inflamed mucosa. This membrane is easily removed and it is seen that it rests upon an ulcerated and bleeding surface. The sub-maxillary glands are usually swollen. There is slight fever. This variety shows the fusiform bacillus alone, but it may be associated with streptococci or staphylococci. This form is the rarer of the two. The second form is ulcero-membranous, and is more common and more important. It is more intense and more destructive of tissue than the first. In this form both the fusiform bacillus and the spirillum are present. The tonsil is the usual point of attack. Both tonsils may be involved and practically all of the mucous surface of the buccal cavity. There is usually a foul odor and sometimes a bloody discharge. Three stages are given to the progress of the disease; first, congestion; second, formation of membrane which occurs in from one day to a week after the onset, and third, ulceration followed by repair when the prognosis is good and when not good, by gangrenous processes and rapid destruction of tissue. The extension of the ulcer is usually lateral. Recovery is usually with in a few days, but more persistent cases last for weeks or even months.

There is great variation in the temperature of these cases. In some instances the rise is scarcely above normal, while in others it goes as high as 103°. The constitutional disturbance also varies greatly. In some it is so slight as to be scarcely noted, while in others there is great depression, fever, furred tongue and loss of appetite. The onset is sudden, beginning, as a rule, with pharyngitis, tonsillitis or acute stomatitis, followed by the formation of the membrane. Chills and fever are often present. There is generally pain at the seat of the lesion, pain and difficulty in swallowing, some enlargement and tenderness of the submaxillary and cervical lymph glands and often times pain extending down the neck into the chest. The symptoms ordinarily are much like those of follicular tonsillitis, but there is less temperature, greater malaise and more local pain. In the total lack of temperature in many cases Vincent's angina differs from every other tonsillar affection. However, when Vincent's angina occurs as a secondary infection, the symptoms are more pronounced and may even progress to death in a brief period from toxemia or exhaustion. In these severe cases, necrosis is very rapid, the tissues fairly melting away and destroying large areas in an incredibly short time. The ulcers vary in size and depth and in the deeper ulcers, may even resemble the edges of syphilitic ulcers. They have a base resembling a worm-eaten surface. Before the development of ulceration, the membrane is soft and thin and adheres loosely, but as ulceration develops, the membrane takes firmer hold, but still remains soft. When this membrane is removed, it immediately reforms. The breath is fetid and some observers term the odor characteristic. Recurrence of the disease is said to be not uncommon. Halsted states that a scar or cicatrix in the soft palate or throat is no more presumptive evidence of previous syphilitic disease than it is of previous Vincent's angina.

Diagnosis. Vincent's angina may be confused with an ulceration of the gums, a mucous patch, follicular tonsillitis, syphilis, diphtheria, carcinoma, and other affections and it may be associated with other organisms. Of course, the rule is that the organism found in greatest numbers, must be held responsible for causation, yet caution must be used as sometimes the organism present in the lesser number may be proven to be the true positive factor. The question of numbers is largely determined by the character of the media which develops more of the organisms to which it is best adapted. In diphtheria the membrane is thick and tough and in Vincent's angina light and friable. These signs and the smear should render diagnosis accurate; membranous croup and laryngitis must be excluded. Vincent himself states that this disease is easily confounded with syphilis and that secondary and tertiary syphilis may become secondarily infected by the fusiform bacilli and spirilli. These organisms seem to have a peculiar affinity for syphilitic ulcers about the throat. Frequent absence of some of the symptoms and a great variation of all of the symptoms, makes the diagnosis somewhat difficult. The greatest reliance must be placed in the smear. Complications with Vincent's angina are many and varied and this again interferes with the easy diagnosis of the disease.

Treatment. If the disease attacks the tonsils, all crypts should be thoroughly opened to promote drainage. The membrane should be removed and affected surfaces cleansed with dry clean cotton and then some application made to this dry clean surface. One of the best applications is monochloracetic acid. Many men use the trichloroacetic acid but the difficulty with this is the fact that it is not a self-limiting acid and may produce too extensive a cauterization. Iodine or chloride of iron in glycerine is also used for local application. Nitrate of silver is sometimes used. Some men use peroxide of hydrogen followed by chromic acid. In this latter we again have the danger associated with using an acid which is not self-limiting. Excision of the necrotic parts or the use of the actual cautery is strongly condemned by most writers, as it should be. Mercury should not be used, even should syphilis be associated with Vincent's angina, until after the angina is checked, as mercury has the effect of increasing and prolonging the angina. Attention should also be given to the hygiene of the mouth. The French report wonderful results from the use of salvarsan. In the *Annals of Otology,* of March, 1915, H. H. Stark reports 25 cases successfully treated with sodium perborate; two teasponfuls dissolved in a glass of water and used as a gargle frequently. The pain and discomfort respond quickly, he claims. From the fact that careful examination of throat smears frequently reveal the organism of Vincent's angina, the question arises is Vincent's angina a clinical entity or is it a secondary infection?

Case 1. Stage manager in opera house, 28 years old, came to me and stated he had a sore throat for 5 weeks. Family physician had treated him, but with no benefit. Pharynx and uvula much swollen and very red. Some small white patches on tonsils which came off easily but reformed in a very short time. Painted with pure oil of cassia, swelling subsided but patches on tonsils persisted and became larger. As I was uncertain as to the correct diagnosis, I sent the patient to our laboratory for careful laboratory examination. Report came back that the case was undoubtedly one of Vincent's angina, as both the fusiform bacillus and spirillum were present in large numbers. Monochloracetic acid applied and the membrane disappeared after a very few treatments, but redness and swelling of the tonsils persisted and the patient seemed very sick. There was little or no temperature. The membrane returned and I watched it for two days; it spread over both tonsils and over the soft palate until it met. Again I used monochloracetic acid and the membrane again promptly disappeared; I then treated the throat with ferric chloride in glycerine and the throat became much better and the patient stronger and seemingly better in every way for about two weeks, but he could not take sufficient nourishment. Yet he seemed to be doing fairly well when suddenly one day he began to get worse and in less than four hours was dead. The last hour of life he gave forth the peculiar odor of uremic poisoning. I think death due to the accumulation of toxines which suddenly made themselves manifest similar to the manner in which diabetic coma manifests itself.

Case 2. Night roundsman on police force, 32 years old, came to me with a history of having had slightly sore and swollen tonsils for a number of weeks; not severe but annoying. I cleaned out the crypts in the tonsils and treated them with pure oil of cassia, twice daily. The patient seemed to be doing nicely and recovering when one morning, about two weeks after treatment began, white patches showed up on the tonsils. As the membrane was easily removable but that it reformed by noon, I had an examination made for Vincent's angina and found the organisms present. I treated this case with monochloracetic acid, followed with ferric chloride in glycerine and the case made an uneventful recovery. As soon as the patient was well enough, I removed the tonsils which were badly degenerated and the patient has been well ever since, with no sign of a recurrence and walks his beat every night.

I have had a few more cases, all of whom recovered. I have had this one death and yet I wonder if Vincent's angina is a clinical entity or a secondary infection?

Ely Block.

FURTHER EXPERIENCES WITH THE BECK-PIERCE TONSILLECTOME.*

Dr. Homer Dupuy, New Orleans, La.

Almost two years have elapsed since recording my experiences* with the Beck-Pierce tonsillectome. An enlarged experience, covering some one thousand cases, has served to re-emphasize that this method of tonsil removal certainly seems to approach the ideal operation, which must seek to enucleate the whole tonsil, *leaving behind the greatest amount of aponeurotic tissue.* A fold of this aponeurotic covering forms the so-called capsule of the tonsil.

The smaller the amount of such tissue that remains attached to the tonsil after its removal, the more perfect becomes the operation, for then we have left a protective covering for the muscles forming the walls of the sinus tonsillaris.

The striking advantages offered by the instrument and the method are that we can, with a single instrument, in a few minutes, enucleate a tonsil with the least amount of traumatism, and therefore lessen post-operative inflammation. This means as an end-result fewer such legacies as cicatricial contractions with distorted pillars, and consequent palatal and pharyngeal deformities.

It is proposed to briefly consider such items as technic, hemorrhage, reaction and age, in the light of my personal experiences.

Technic. In the main, the tonsil is lifted from below upward into the supratonsillar region. A bulging mass now presents itself to the outer side of the ring of the tonsillectome. We then gently push this mass through the ring, keeping the index finger as a fulcrum on the everted tonsil. We then bring into action the wire snare which further separates the tonsil from its surroundings. We sometimes modify this procedure by using, as practiced by Sluder, the hump of the lower jaw (the alveolar eminence) as a fulcrum. The tonsil is pushed through the ring, as previously described. With its cryptic surface protruding through the ring, we then draw the mass down and jam the outside of it against the alveolar eminence, where the everted tonsil is firmly held while the snare completes the enucleation.

We have learned with increased experience that it is absolutely necessary to work with two-sized rings, the small and the medium, if we would succeed in removing 95 per cent of tonsils by this method. The small ring is especially necessary in the enucleation of the small (lymphoid) and friable tonsil. Even the medium-sized ring would fail us with such a tonsil, which is the one usually present in very young subjects. In fact, once we have perfected our technic, from the instrumental point of view, it might be stated that the ring is seldom too small and oftener too large.

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*A Study of Five Hundred Tonsil Enucleations, with the Beck-Pierce Tonsillectome, Southern Medical Journal, May, 1916, page 453.

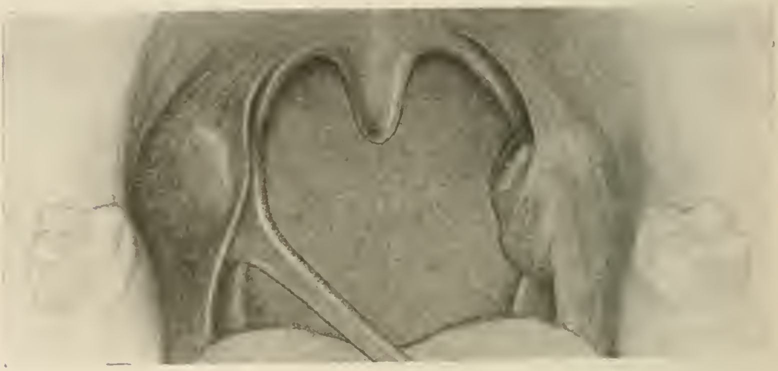

Fig. 1. First step. Lifting and pushing the tonsil against the upper end of the anterior pillar and the supratonsillar fold.

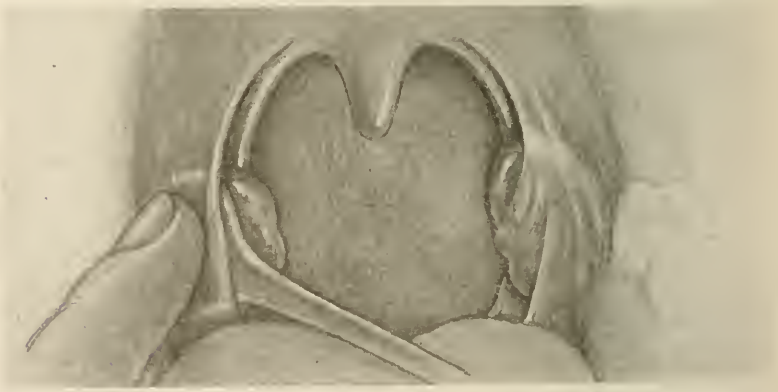

Fig. 2. Second step. Pushing the cryptic surface through the ring with the right index finger acting as a fulcrum.

Ambidexterity is essential, for we reverse our position on either side. The right index finger pushes the tonsil through the ring on the right side, the left index finger is used for the same manipulation on the left side.

Hemorrhage. It is a reiteration of my former experience to state that the hemorrhage is unquestionably greatly reduced by this method. True, we practice ligation for undue oozing and on a spurting vessel. This is simply a routine practice, for my attitude in tonsil surgery is to take no chances.

If we would still further lessen the bleeding, it is advisable to draw the wire snare slowly through the base of the everted tonsil. We have tried MacKuen's suggestion of placing a snare over the everted tonsil, between it and the rim of the Beck-Pierce instrument. We see no special advantages in encumbering an already overcrowded field of operation with more instruments. Thus far we have adhered strictly to the original instrument.

Reaction. We are still impressed that the reaction, locally and constitutionally, is notably less than by any other method. This is just what we should expect. The possibility of destruction of such structures as muscles and mucous coverings of the pillars is reduced to a minimum. Sufficient aponeurotic covering remains behind to leave a smooth fossa free from exposed muscle tissue. The channels for local and systemic infections are then closed, and as a rule there is very little post-operative disturbance.

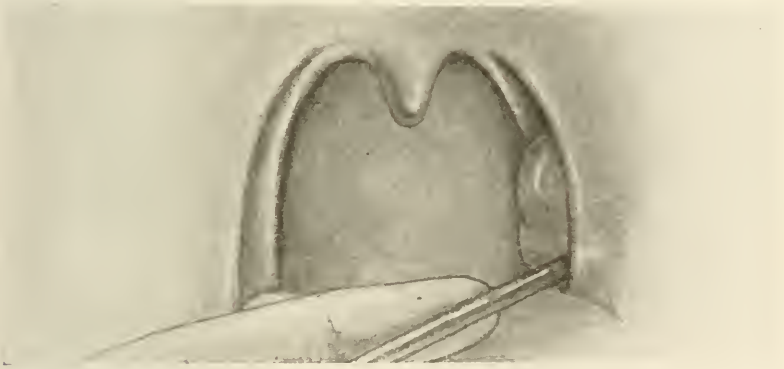

Fig. 3. Using the left alveolar eminence as a fulcrum after the tonsil has been pushed through the ring.

Age. When recording our first five hundred operations by this method, the majority of our subjects were between the ages of three and ten years. The successful enucleations represented about 85 per cent. Practice and improved technic now increases this percentage to 95 per cent.

We were then not impressed with the adaptability of this instrument in adult cases. Further experience, however, using general, and more frequently local anesthesia, has greatly increased our happy results. In many instances, even submerged tonsils were removed with a minimum of reaction. After all has been said, even on the question of age, it seems largely a matter of perfected technic whether or not we can successfully remove all varieties of tonsils with the Beck-Pierce tonsillectome.

124 Baronne Street.

DEPARTMENT OF MEDICO=MILITARY ACTIVITIES.

ABSTRACT FROM THE SURGEON-GENERAL'S LETTER ON THE RECOGNITION OF SECTIONS REPRESENTING SPECIALISTS —SECTION OF SURGERY OF THE HEAD.*

The specialities which form this group are Opthalmology, Oto-Laryngology, Brain Surgery and Oral-Plastic Surgery of the Face.

The personnel of the Section of Surgery of the Head of each Cantonment Hospital includes one brain surgeon. This assignment is primarily for the purpose of caring for the brain cases ocurring in the service of the hospital, and secondarily, to acquaint the surgeon with the methods of management of a military hospital, preparatory to going abroad.

A general surgeon especially trained in plastic and oral surgery is one of the personnel of the section of surgery of the head. He has associated with him as assistants, one dental surgeon, and except in evacuation hospitals, also one dentist. Because of the probable small number of brain and plastic and oral cases in the Cantonment Hospital, the surgeons of these two divisions will assist each other in caring for their respective cases. In the special building for the Section of Surgery of the Head there are special operating rooms. One of these is set aside for the services of Oto-Laryngology. This room is to be shared jointly by the Oto-Laryngologist, the Brain Surgeon and the Oral Plastic Surgeon. Whenever the Brain Surgeon and the Oral Plastic Surgeon need instruments not in the Oto-Laryngological equipment, they are to be obtained from the general surgical equipment.

The surgeon in charge of Plastic and Oral Surgery has charge of injuries and surgical diseases of the mouth, and its essential structures, including the bony framework and soft structures of the race, and also of the neck when the major part of the injury is situated above the clavicle.

Exception to this classification is made in injuries and surgical diseases limited to the orbit or its appendages when the attending Opthalmologist elects to do the work himself.

In injuries and diseases of the external nose and external ear and the accessory sinuses, when the attending Oto-Laryngologist elects to do all the work himself.

In injuries and surgical diseases of the larynx when the Laryngologist elects to do the work himself.

In thyroid diseases, and in special cases of injuries of the peripheral nerves and the spinal column.

The commanding officer or the surgeon in charge of the hospital may delegate such other work to the surgeon in charge of Oral Surgery as the exigencies of the situation may dictate.

In the absence of the Oral Plastic Surgeon, the Dental Oral Surgeon represents the Oral Surgery Division of the Section of Surgery of the Head. The Dental Oral Surgeon is advised to consult the surgeon in charge of the Section of Surgery of the Head in any question that may arise in the appointment of cases or in the Dental Oral Surgeon's relations to the Oral Surgical and General Hospital work.

In cantonments the Dental Oral Surgeon's main work will be detecting and treating focal infections about the gums and jaw bones, of which there will be a great amount. There may not be enough Oral Surgery to fill all of the Dental Oral Surgeon's time, or the Dentist Assistant's time, in which case he will do such other work as the Surgeon may delegate to him.

J. C. GORGAS,
Surgeon General U. S. Army.

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* From letter to Committee representing The American Laryngological Association, The American Otolog. Society and the American R. L. and O. Society.

Major George M. Coats, Philadelphia, is at Base Hospital, Camp Sevier, Greenville, S. C.

Dr. William H. Haskin, New York City, has been commissioned Captain in the M. O. R. C., and has been assigned to the Military Academy at West Point, N. Y.

Dr. Harold Hays, Dr. Samuel J. Kopetzky and Dr. Gerhard H. Cocks are in France.

A military training school in Plastic Surgery of the Mouth and Face has been established at Washington University Medical School, St. Louis. Major V. P. Blair and Dr. H. W. Loeb are in charge of the courses.

Capt. James R. Peabody, Louisville, Ky., has been ordered to Post Hospital, Fort Monroe, Va.

Major John F. Culp, Harrisburg, Pa., has been ordered to Base Hospital, Camp Hancock, Augusta, Ga.

THE DOCTOR'S CONTRIBUTION

In this world's war, your service is absolutely essential.

The medical officer bears the same relative position in war as in peace in that he is a conservator of health and life.

Through his skill, thousands of men receiving slight casualties, are returned to the fighting force, thus conserving the physical strength of the army.

In Base, Field and Evacuation hospitals, doctors are as essential as in civil institutions, where the sick and injured are cared for.

As regimental surgeons and on transports and in the Sanitary Corps, must the Government have doctors if we are to terminate this war successfully.

Your contribution to your country at this critical time is *your service* which you can give for the period of the war as an officer in the Medical Reserve Corps. That your country needs you, is best answered in that she is calling you *now*.

The fighting forces are constantly expanding and such expansion calls for additional doctors and even with the troops now in training and under mobilization (about two million) the Surgeon General has not enough doctors to fill the requirements.

Secure an application blank at once; fill it out and present it to your nearest Examining Board. Do not live to regret that you did not have a part in your country's great struggle for democracy which means *Liberty*.

THE FULL SACRIFICE

Our Country is at war. Men are called according to their talents and training to enter the different branches of the Service. Physicians always have a special place, and those of special training are even more fortunate. No choice has been left to youth because its strength and enthusiasm are asked for by law. Men of mature age have the glory of choice. They choose to serve or let others serve. For the moment the enemy is at a distance, and those without imagination see him always there. The lack of a disaster within our gates makes us feel secure. Many, therefore, are putting off the day of service. Many hesitate and question; some even bargain.

To relinquish liberty causes not a few to shrink back. Yet, those who have taken themselves apart and made the decision and are now doing the duties assigned to them as well as they may, cherish as dearly as the heart can, the liberty to be with wife and family, to continue to engage in private or public medicine, to carry on their investigations, to teach in hospital or medical school, and to provide for their old age. The right to these blessings of peace belongs to no one man. Some there are, however, who by actions or words seem to claim a right to these blessings over their brothers.

No work is too small in a cause nearly sacred. Some have thought otherwise. But whoever is above the work which naturally falls to him, and works, if at all, only with reservations, misses the finest inspiration that duty fully done can supply. He who consciously or unconsciously allows self to decide in this matter is to be pitied. The spirit of service, which, if allowed, would almost transfigure him, he has failed to grasp. Greater peace can no man have than he who has made the full sacrifice.

SOCIETY PROCEEDINGS.

ABSTRACT OF THE SCIENTIFIC PROCEEDINGS OF THE THIRTY-NINTH ANNUAL CONGRESS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

Held at Atlantic City, New Jersey, May 28, 29, 30, 1917.

EMIL MAYER, M. D., Abstract Editor, New York.

The president, Dr. Joseph L. Goodale, after expressing his appreciation of the honor conferred on him, said:

This year we meet at a time when the thoughts of all are centered upon our entrance into the great war. Aside from the fact that lesions of the upper air passages are especially frequent in the present war, both from the character of the missiles and from the use of asphyxiating gases, observers have noted a great increase in inflammations of the nose and throat, spread by contagion among the numerous masses of men in modern trenches.

The contributory causes are the prolonged stay in the trenches, the dampness and want of ventilation in the dugouts, together with the defective light, in which the virulence of micro-organisms is increased, or at least the bactericidal influence of sunlight and fresh air is absent. These conditions appear to favor not only the spread of acute catarrhal infections, but also of cerebrospinal meningitis. The importance of stamping out foci of this latter disease has suggested the desirability of examining recruits with reference to the possibility of their being carriers through lodgment of the meningococcus on the mucous membranes of their nasopharynx. Disinfection of the mucous membranes of carriers has been successfully accomplished by placing the individual in a chamber containing a certain percentage of chloramine vapor for a few minutes. The procedure is said to cause but slight irritation to the mucous membranes, but seems to have almost a selective action on the micro-organisms in question.

Some sections of the line appear to be especially unhygienic, and numerous cases occur of infection which in ordinary life are rare, such as perichondritis of the larynx and primary laryngeal tuberculosis. Latent systemic disease is prone to be lighted up—such as tuberculosis and syphilis. Bleeding from the nose, trachea and bronchi, at times of an alarming extent, often occur. In albuminuria, fatigue and cold are apt to bring on glomerulonephritis, a not infrequent symptom of which is edema of the glottis. The unfavorable influences are increased by the difficulty of changing clothing, transportation in open vehicles, and by rapid changes of temperature.

Direct laryngoscopy has proved its value in locating traumatic lesions.

Secondly, may we not then profit by an examination of the writings of those who are now endeavoring to indicate some of the errors of judgment and conduct in matters of education and research?

In illustration of past deficiencies in this respect may be cited the fact that for many months the English authorities, while rigorously excluding from Germany such articles as saltpeter and cotton, nevertheless were permitting the exportation of lard from this country in large quantities, in ignorance that it is the source of glycerin, and consequently a prime requisite in the manufacture of explosives.

We must, therefore, recognize that as nations court destruction for want of science, so our profession in America runs the risk of being outstripped by that of other countries unless it rests upon an equally secure foundation of scientific training with all that this implies.

Another matter which I wish to present for your consideration is the slackening up of scientific work in allied countries in the early part of the war.

We should differentiate between those educators and investigators, on the one hand, whose position permits an advantageous deflection of their activities into channels capable of rendering a direct national service, and on the other those individuals who, by reason of their age, lack of physical qualifications, or from the nature of their work, may regretfully feel that they must stand aside without a definite service to offer.

Such men are capable of making a very real contribution to the nation. It is for them to uphold the best traditions of their past, to maintain without faltering their customary work of teaching and investigating, and to present to their comrades whose good fortune it may have been to participate more directly in military service, on the return of peace, a definite record of having kept undimmed each in his own chosen field the light of education and of research.

Further Observations Upon the Use of Radium in Diseases of the Upper Air Passages. Dr. D. Bryson Delavan, New York.

From a report by Dr. Ewing and Dr. Janeway of the Memorial Hospital in New York City, an institution devoted to the study of cancer, the writer presents a summary of one hundred and eighty-four cases of cancer of the upper air passages out of a total of four hundred and twenty-two cases.

The successful cases given in the report of cancer of the mucous membranes are illustrative of the best service that radium in the light of our present knowledge can perform. In the majority of them the lesion was small and probably operable, but for some reason operation was deemed inadvisable or was refused. While all show complete clinical retrogression, this—from the point of view of those who only consider as cured those patients who are well after three to five years—may not be an absolute cure. The proof must be left to time.

In advanced cancer, any temporary benefit from radium is usually overshadowed by the later progressive extension of the disease. No patient of this class should be given treatment which will be followed by more than transitory discomfort.

To summarize a few after-points made in the report which seem to carry special weight:

Knowledge of the use of radium is making steady progress.

The work of but one year in a single institution shows a marked advance.

As with surgery as applied to carcinoma, so with radium, for the best results are gained by the prompt treatment of early cases.

The question at once arises as to how long it will be before the use of radium will be proved worthy to supplant surgery.

DISCUSSION.

Dr. Charles W. Richardson, Washington, D. C.: I have had very unfortunate results after the use of radium in five cases which I recall to mind—four of cancer of the tonsil, and one of cancer of the cheek. They have all died. The cancer of the cheek was discovered very early. Now, these and the other two cases, which were later, all died in the usual course of time.

There is, however, one thing to be said in favor of radium in the treatment of these cases, and that is the wonderful relief it gives of all of the disagreeable symptoms. As they went along their course these cases did not look like extensive malignant disease of the tonsils, as we usually see them. There was very little odor and the lives of the patients were fairly comfortable and free from pain. One died from hemorrhage, and the other three from toxemia, and this toxemia came on one week and the next week they passed away. It was all very quick, and they were apparently in good health except for the local condition. Until the time of toxemia they were interesting in that way, that they were all very much more comfortable, but they all four were fatal, and fatal in about the time they would have been without any treatment at all.

Dr. Robert Clyde Lynch, New Orleans: I have four cases in my experience now, one of which I believe is definitely well. It is a case that has apparently been cured—at least the patient has had no recurrence for eighteen months. He received no benefit at all from the action of the radium until the radium was put in the laryngeal cavity through a tracheotomy tube. Seventy-five milligrams of radium and screened over with a milligram of pure gum rubber was left *in situ* for eight hours, tied into the larynx by means of a catheter, and put in through a tracheotomy tube passed through the mouth, the radium slung between two strings, the lower string tied to the tracheotomy tube and the upper string to the teeth. In that way the radium was brought into actual contact with the diseased tissue. This was one of the cases that had a recurrence after dissection by suspension, and that recurrence has entirely subsided and the voice returned, and he is apparently well—that is, he has been well for eighteen months at least.

In another case operated upon with a third recurrence it was thought to be perfectly inoperable, and the application of radium to this area caused perfect and complete subsidence of every evidence of the recurrence. It is now six months since this application, and apparently there is not the slightest indication of any recurrence of this metastasis to the second side. In this instance again we were able to supply the radium actually to the site involved, and I wonder whether inability to secure any results in the laryngeal areas is not due to the fact that the cartilage must act as an interceptor to some of the rays, or influence the action of the radium within the laryngeal box.

Dr. E. Fletcher Ingals, Chicago: A patient came to me from a distant state with a growth in the pharynx running perpendicularly. It was about one and a half centimeters in its various diameters and about three or four centimeters long; that is, it extended from the upper pharynx down to the arytenoid cartilages. I could not tell how much farther. The patient came with a history of not having been able to swallow for some time, and was much emaciated and in an extreme condition. The effect of radium in this case was something marvelous; the growth simply melted away. At the end of about eight days the tumor had all disappeared, but there was a large ulcerated surface that represented the base of the growth; and the most remarkable thing was that the ulcerated surface completely healed, so that within a short time one could not even see the scar. When this growth had disappeared I found that the patient still could not swallow, and then I was able to determine that she had cancer of the esophagus lower down. I passed a catheter down to the obstructed point, measuring the distance, and then placed the radium in the catheter and, measuring the distance, passed it down into the stricture. The result of the first application was to open up the stricture very decidedly, and a later application opened it up so that the patient could swallow very well. However, in one of the earlier applications the throat was burned so that it had the appearance as though it had been burned with boiling water or a hot iron. It became very sore and there was considerable sloughing. The patient had a great deal of discomfort for ten or twelve days; however, the burn finally healed.

Dr. J. Payson Clark, Boston: I want to add my testimony to what Dr. Richardson said in regard to the value of radium treatment in relieving the symptoms, especially the symptoms of pain. I was very much impressed with the relief which was obtained in swallowing by patients who had before suffered a great deal.

Dr. Lewis A. Coffin, New York City: I have had a little experience in the last year with radium. I had become thoroughly discouraged in its use and the effects from it. However, we are glad to get anything that adds a ray of hope to forlorn cases.

In one of my cases all the symptoms were very much relieved. The woman could not swallow at all when she came to me, and shortly afterward she was eating fairly and greatly relieved. But the glands softened up somewhat, and we thought it well to open those glands and let out the broken down tissue and put the radium in those glands and left it there all night. The woman, however, began to lose ground and she soon died.

Another patient had a growth in the epiglottis, and a pathologic examination showed it to be malignant. In that particular case it was just like adding manure to soil: the growth was very much stimulated and it grew more rapidly than if we had not used radium.

Dr. Burt R. Shurly, Detroit: I am enthusiastic enough in the use of radium to feel that it is our duty at least to use this method of treatment in all cases of malignancy where we so thoroughly understand that surgical methods are not sufficient to accomplish results.

I operated on one case which involved the soft palate, the upper jaw and the antrum from time to time—three operations in all—and after each operation there has been a very slow recurrence. During the past three years we have used radium at intervals of from three to six months, and the radium has been passed up into the antrum after the antrum operation and held there by the use of soft, pliable copper wire which will bend in any direction.

Another case that I have had which has now been going on for about three years. By a series of applications of radium his case has undoubtedly been prolonged and been benefited, and what looked to be a very speedy fatal issue has turned out to be a slow process that has now continued for three years.

I do believe that radium has a very decided field of usefulness, but there is a great deal in the scientific application of it, and in the dosage and method by which it is applied. It is a field within itself, and we should have an expert who will help us in that branch of the work and upon whom we can call at any time.

Dr. Emil Mayer, New York City: I would like to have the reader of the paper in closing give us some statement as to what class of cases have done best. It is very possible that we may innocently do some harm to the patient in our attempts at making a diagnosis. Ought we not, therefore, learn of the experience of those who have followed these cases and found that perhaps it may be that those cases have done best where the diagnosis has been made clinically, and no previous attempt made to remove a part of the growth for microscopic examination to prove the diagnosis? Is it not possible that that stimulates the recurrence of the disease? If we can have that made clear, it does seem that we may be able here to formulate some positive distinct rule as to the method we may adopt with safety.

Dr. Harmon Smith, New York City: I believe the good results that are obtained from the application of radium lies in the fact that practically all tumor growths vary in their virulency, and that those cases which are benefited by radium are less virulent than those cases which go on in their natural process of malignancy to a fatal termination.

I am associated with the same institution as Dr. Delavan, and I have sent a number of inoperable cases there—patients upon whom I had previously done a tracheotomy. This is an institution where every facility is available for properly applying radium in advanced cases, and each case went progressively on to death. In addition to these cases, I have sent two cases of retrolaryngeal fibroma, and one went on to death. In the other case there was such burning and excoriation of the mouth that we had to feed the man by rectum for a week, and instead of retarding the growth, it became accelerated and involved the cheek. This was an angiofibroma.

Dr. Norval H. Pierce, Chicago: Based upon his experience, the speaker believes that while a growth may show the characteristics of carcinoma under the microscope, it may vary greatly in malignancy.

At the present time there must be an enormous number of these cases, and I cannot see that we have arrived at any particularly well defined opinion regarding the beneficial effects of radium, even at the present time. I can only state that my experience with radium has been, in a broad sense, disappointing.

Within the past two years I have had three cases of carcinoma of the superior maxilla involving the antrum, and without exception they have gone from bad to worse, although every means of applying radium has been followed, even to perforating the antral wall and putting a capsule of radium immediately into the growth. True, the pain has been diminished and the odor has decreased, but the disease has swept on as though nothing had been done.

I believe that if we depend upon radium for a cure in the early stages of laryngeal carcinoma, we will have about as much effect beneficially or otherwise, in the large majority of cases, as we would have if we depended upon faith. We only waste time.

I have had a case recently in which we split the larynx and applied the radium without cutting away the growth, a case of leucoplakia laryngis, where I had observed the patient for four years. This leucoplakia was situated on both vocal cords. The leucoplakia remained unchanged for four years. Suddenly from one of these placques on the right vocal cord, the posterior third, a swelling began—a fusiform swelling covered by mucous membrane—and a well marked cauliflower-like carcinoma developed. The larynx became very much inflamed, and the last I heard of the patient was that there was a probable recurrence of the growth.

The only possible chance for cases of carcinoma of the larynx is thorough removal by external means at a very early date, no matter how early. Whether we apply radium or not is immaterial; otherwise in extensive carcinoma the only means of safety is a thorough operation, and by that I mean laryngectomy.

DR. JAMES E. LOGAN, Kansas City: I believe if the suspension method is used and a local application of the galvanic cautery is made directly to the growth, comprehending or taking in all of the growth so far as is feasible, that we will have accomplished practically all that we could accomplish, if not more, than in an application of radium.

If we are to judge from the literature pertaining to the subject, there appears to be very little, if anything, in the use of radium for such cases.

DR. JOSEPH BECK, Chicago: It is about fourteen years since I started the employment of what I thought was radium in diseases of the upper respiratory tract, and only about five or six years ago did I find out (and then reported with negative results) that practically no radium was contained in the capsule that I was employing. So far as I am able to learn from the literature on the subject, too little radium was employed, and then when an amount, say one hundred and fifty to two hundred milligrams, was left *in situ* for a period, it burned the structures beyond repair, so that the remedy was worse than the disease. My results are absolutely negative as to cures of deep-seated growths; I will not even say of far advanced cases, but of those which I would ordinarily class as operable. When radium was employed in such cases the ultimate result was either laryngectomy in time to save the patient, or a fatality.

If Dr. Mayer would have us treat cases without touching the growth, it does not seem to me it would add anything. We will not know what we are treating. This does not appeal to me. If we do not have microscopic examinations of the growths we are treating, it seems to me the subject would not advance very far.

DR. D. BRYSON DELAVAN, New York City (closing the discussion): The work which is being done at the Memorial Hospital in New York is very far in advance of anything that I know of that has been done anywhere else, and for that reason I have taken the liberty of presenting this resume of that work.

In this report I mentioned, the hospital gives you the results of its work along this line. It is the best they have been able to do in three years' time with a very considerable number of cases. When more years have passed they will have thousands of cases, but their attitude in treating these patients is purely experimental—time will give more definite results, or at least more conclusive results, whether better or worse.

Of all the cases treated, there are a total of twenty-two which are believed to have fairly retrogressed. That means twelve per cent of the one hundred and eighty-four cases. There are also seventy-nine cases which have improved, which is a total of about forty-three per cent. There are also seventy-nine cases unimproved. This makes a total of fifty-five per cent supposed to be improved, as against forty-three per cent unimproved. In cancer of the esophagus, stomach, etc., the statistics are just about the same.

The method must be adopted to the case, and the ingenuity of the one managing the case must play an important part in the selection of the means of application.

The device of Dr. Robert Abbe is simple, ingenious and very effective. It is intended for the application of radium to the more remote recesses of the body, and is especially useful in the larynx and pharynx. It can also be introduced in any part of the upper nasal cavity, which is extremely difficult to reach by any other method.

There is another thing which has come to be used in the treatment with radium, and that is an obturator like a plate for artificial teeth, extending backward to the site of the growth and furnished with grooves in which the radium can be placed to the location desired.

As to the hopelessness of cancer of the throat—it is pretty hopeless. The cases all die. We do not get the true statistics of surgery of the larynx. You cannot get them—no one will give them to you; but if you should get them, you would have a pretty ghastly record. Perhaps it might, therefore, be just as well to exercise a little patience toward radium until we find out what it can do, and look forward with a ray of hope meanwhile to cheer the men who are working very hard to perfect it.

An Endolaryngeal Removal of an Unusually Large Lymphoangioma from the Larynx, with Complete Recovery of the Patient.

By CHARLES W. RICHARDSON, M. D., Washington, D. C.

(To be published in a subsequent isssue of THE LARYGONSCOPE.*)*

DISCUSSION.

DR. J. M. INGERSOLL, Cleveland: I had the privilege of seeing this case before it was operated upon, and was very much interested in the report. I think that it took considerable courage for Dr. Richardson to determine whether or not the growth was an angioma by incising it. I discussed the case with him then, and we both wondered what the outcome would be, and were suspicious of malignancy. I never had seen anything like it before. The end result is very favorable.

DR. EMIL MAYER, New York City: These cases are especially interesting. One particularly important thing is that the trained eye of the laryngologist sees at once that the diagnosis that is so often made in nearly every one of those cases is wrong, and that the cases are not of a malignant nature. I can picture for myself the view that Dr. Richardson had of that patient, with a proper light, where he at once concluded that the original diagnosis of malignant disease which had been made was wrong. I believe that we can in most instances make a diagnosis macroscopically.

I must congratulate Dr. Richardson on his courage in putting in a knife to see if it was a bleeding tumor, and also on his successful removal of it intralaryngeally. The growth itself differs from most of the others on record, in that it was partially external and partially within the larynx. It is very remarkable that a patient with so large a growth should be able to get along without a great deal of dyspnea. To my mind a case of this kind would be ideal for suspension. With very little effort one could draw the growth into a snare and remove it, and if necessary cauterize the place. In the case I reported a year ago the operation was done externally, and the growth was removed and the mucous membrane sewed over. I am confident that that was the only way the case could have been treated, for the reason that it was below the false cord and not above it.

Dr. Henry L. Swain, New Haven: Some of those present may recall a case in which I removed a tumor in the same manner as Dr. Richardson did, the report of which appeared in the Transactions for 1892. This growth, however, was lower down than it was in the case of Dr. Richardson, and it still holds the record for size in strictly intrinsic growths of the larynx. The growth was in the anterior commissure, and began only slightly above the place where the two cords come together, so that more of the base of the tumor was below than above. When the patient came into my office one could see nothing but the growth upon expiration, but during inspiration this tumor would move down so that the air could get by it. The patient had been living in that way with a very hoarse voice and with difficulty in breathing for nearly two months. He ran for a trolley car and fell down and was nearly asphyxiated, and relating that to me as I looked down into his larynx, I trembled at the idea of getting the tumor out. I had no idea of the up and down dimensions of the tumor; the diameter as I looked down upon it was just what would fill the chink of the glottis, but the vertical dimensions were three times the horizontal dimensions. I told the man that if he was a good soldier I would try to take it out. He consented and I put cocain in, and taking a snare got a good hold of the tumor twice. I tried to get the tumor out but failed. The man was getting blue in the face, but I put on a whole lot of power and got it out. I was more scared when it was finally out than I was before. It was a tremendous growth, much larger than was apparent to the eye, and still holds the record for size. I was prepared for the eventuality of hemorrhage, and told the man to throw himself forward with his head down, hanging over the end of the couch. He minded exactly as he was told, and hardly a drop of blood came away. He came back again on the third day and one could see then where it had been, just above the vocal cord. The patient had no recurrence. Dr. Richardson's specimen is a monster and the result of his skill is most gratifying.

Dr. Charles W. Richardson (closing the discussion): I wish to add just one word to Dr. Ingersoll's remarks, a point which he did not make quite clear. We were a little suspicious of the malignancy of this growth —in fact, we could not quite eliminate the matter from our minds—before we had the result of the pathologic findings.

Report of a Case of Carcinoma of the Larynx Treated with Radium. Dr. Arthur W. Watson, Philadelphia.

A physician, about seventy-three years of age, came under my care November 24, 1914. There had been increasing hoarseness for a year, without inflammatory symptoms, pain or cough; the general health was good, the general history was negative.

Examination of the larynx showed a smooth, red, sessile growth or swelling on the left side beneath the vocal cord, extending from the anterior commissure backward about one-half the length of the cord, and downward from the cord about one-half inch. It seemed to involve the under surface of the cord. Movement of the anterior half of the cord was restricted, which caused bowing in phonation. The growth was sharply defined and the other parts of the larynx appeared to be healthy. A clinical diagnosis of carcinoma (epithelioma) was made. For obvious reasons a microscopic examination was not made.

When first seen the growth was one that could, undoubtedly, have been removed by laryngofissure, but in consideration of the age of the patient and the fact that he was in favor of trying the effect of x-ray or radium, it was decided not to operate.

The radium was applied to the outside of the larynx; eleven milligrams radium, filtration one millimeter of lead, and one and one-half inches of gauze, for three hours. This was repeated in February (six treatments, 198 milligram hours). March 1st the radium was increased to twenty milligrams, filtration one milligram lead, one-half inch gauze, applied for three hours. This was repeated (six times, 360 mg. hours). March 17th began forty milligrams radium, filtration same as before, applied for three hours. Repeated (six times, 720 mg. hours).

Various applications were made, none of them satisfactory, and it had to be abandoned. The external application of the radium again instituted in the following dosage. Forty milligrams radium, filtration one millimeter lead and one-half inch gauze, applied five hours July and August (in all, nineteen applications, 4200 mg. hours).

September 23rd, about one month after discontinuing the radium, it was noted that the growth was apparently gone, left vocal cord a little slower in movement than the right, skin inflamed over larynx.

On the second of April, 1917, the patient returned with hoarseness, which he had noticed for a month or more. Examination showed a small nodule beneath the edge of the left vocal cord near the anterior commissure, the site of the old trouble. Radium was again used, a few day later, forty milligrams, for twelve hours. The larynx was examined tw weeks later. The growth was found to be smaller, the neck inflamed April 25th, only a slight thickening remained. The voice was aga almost normal. The same condition was present when last examined.

From the results that I have seen in suitable cases, and with a better knowledge of the dosage, better results may be expected, especially if the radium can be applied from within the larynx, which would be made easier by a tracheotomy.

DISCUSSION.

DR. ROBERT C. MYLES, New York City: It is a question to be solved, whether in the early stages of incipient cancer it is best to immediately remove the cancerous mass with the adjacent tissues, and if it recurs to use radium, or whether it is best to use radium without microscopic examination. In this connection it would seem best to consider to what extent we would advocate either procedure if the growth was in ourselves. Judging from personal experience and observation, it is my belief that the average person who has a growth, or symptoms of a growth that is probably malignant, defers the question because they do not like to have it decided that they have one, and hope against hope that nothing will be found. There is unnecessary delay caused by that attitude of mind.

As far as the secondary or tertiary conditions of cancer are concerned, it seems to me to be unwise not to use radium for the hope it offers in the relief of pain and odor and the other phenomena connected with malignancy.

I think it was Dr. Mayer who made the remark earlier in the morning that we should first try to cure the patient and leave the scientific diagnosis unsettled. On the other hand, this is not conducive to progress; again, I do not know whether we can improve the physical conditions of a case which experience has shown us is malignant, by microscopic examination, nor do I see what the chances are of it being nonmalignant by resorting to such examination.

Dr. Henry L. Swain, New Haven: I am very glad that we have heard this paper, first because it was a model in the way it presented the dosage, method of treatment, length of treatment, etc., and secondly, because it left us with a spirit of hopefulness.

This is again the case of the old, old story. We went through all this with the x-ray. We had in our hands a powerful means, the possibilities of which we knew nothing, and we learned by exchanging experiences in the various meetings all over the country that x-ray burns were produced, that we must use a filter, that we had to have adequate dosage, if we were going to get results. We are now doing the self-same thing with radium. In exchanging these experiences now, it seems as if we ought to come to some conclusions. I think one thing is clear—that we should not putter around with other means, and if we are going to use radium, we should get at it early. Inadequate dosage is worse than nothing. On the other hand, we must not use such a tremendous dosage that we either kill the patient or the surrounding tissues.

Dr. E. Fletcher Ingals, Chicago: I am under the impression that the dosage here is quite as important as in giving strychnin; that is, if you give too large a dose it will do a great deal more harm than if nothing had been given. If we read the reports of the men who have used radium, we will find that there has been in some cases great destruction of tissue from which some patients have finally died. Some patients can tolerate larger doses than others. It appears to me that radium, x-rays and sun's rays act practically in the same way: they burn in every direction where they can reach, unless properly screened. All the weaker tissues burn out first; but if the dose is a little too strong, the normal tissues will burn out at the same time. If this is correct, then the dosage is by far the most important thing; it must be worked out carefully. I tested each individual patient—a small does at first, and repeated, according to its effects.

Dr. Arthur W. Watson, Philadelphia (closing the discussion): What

I wished to bring out was the question of dosage. I am of the opinion that if the dosage is too heavy, so that the normal tissues around the growth are destroyed, cicatricial tissue is produced in which the malignant disease may more readily be reproduced. It seems to me that this may be the reason for failure to cure the disease in some cases. But I believe the best way of getting at the proper dose is by regarding what has been done in each case, instead of considering one application of radium the same as another.

Tuberculoma of the Tongue. Dr. Carl E. Munger, Waterbury Connecticut.

Male, aged thirty years. The patient's tongue presented a crater-like cavity situated on the dorsom, at the junction of the middle and posterior thirds, in the median line, the prebase of the tongue. At the bottom of the crater was a marked ulceration covered with a yellowish slimy secretion, and from the central ulceration were narrow, sharply-marked ulcerations radiating to the circumference of the thickened and indurated mass. The surface of the swollen mass was yellowish in color, and there was marked and exquisite tenderness upon the slightest pressure, with much pain at every movement of the tongue. This pain was localized and not radiating when the tongue was at rest. There was present also the condition known as nigrities.

While the tubercular ulcer may be primary or secondary, a primary tubercular lesion of the tongue is extremely rare; although a few cases of tubercular infection of the tongue following traumatism have been reported. Speaking generally, the tongue is more often inoculated from the lungs than the lungs or larynx from the tongue.

The case reported presented a marked deviation from the usually reported situation of tubercular lesions on the tongue, which have almost invariably been stated to occur either on the tip or sides, this one being on the dorsum, a site on which we usually find a gumma.

The prognosis is not dependent upon the lesion itself, but is influenced alone by the fact as to whether the patient is suffering from concurrent lesions in other parts of the body which are not susceptible to improvement, or is he suffering from pulmonary tuberculosis, where there is a tendency to fibrosa? If the latter is the case, there is a fair degree of certainty that the tongue lesion may heal without local therapy, but if the pulmonary process is acute, with caseation and necrosis active, there is little chance of the tongue healing.

DISCUSSION.

Dr. Burt R. Shurly, Detroit: "In a service of one hundred and fifty beds during the past six years in a tuberculosis hospital, we have had two cases of tuberculous ulcer of the tongue. Both of these occurred in a far advanced condition. I have yet to see, in my experience, a primary tuberculous larynx or a primary tuberculous ulcer of the tongue. Invariably, those cases have shown some other activity somewhere, if it is looked for sufficiently and thoroughly. These two cases suffered the most terrific pain and had progressed so far that there was absolutely no chance of curing the patients. We simply cauterized the ulcerations and made use of orthoform and other measures for relief, in the hope that they might be able to have a little more comfort and take some nourishment. In all these cases it seems to me that we ought to determine the relative frequency of bacilli. By this means the diagnosis is proved and syphilis is excluded. What seems to me marvelous is that we do not have some ulceration on the tongue, from the fact that the mouth in these advanced cases is absolutely alive with swarms of tubercle bacilli.

Dr. Thomas H. Halsted, Syracuse: Seventeen years ago I removed the tonsils of a girl of twelve years, which were tuberculous. A year or two afterwards a surgeon removed the cervical glands of the neck, which were tuberculous. Two or three days later she developed a mastoid and in the course of that developed a localized pachymeningitis. We thought it was tuberculous meningitis and expected her to die, but she recovered. Later on, in the course of two or three years, she developed tuberculosis of the phalanges, and one thumb and one finger were both operated upon by a general surgeon. She then developed tuberculosis of the nasal mucous membrane, which I curetted and applied lactic acid for a number of months. Then she developed a tuberculous ulceration of the alveolus, which must be now four or five years ago. Later, within the past two years, she has developed tuberculosis of the nasal septum, and the tuberculous process has extended so that now it involves the tip of the nose, and it looks as though she will lose the tip of her nose. This girl, during this whole period, has been a seamstress, and is of course living a fearful life, with a great deal of pain in the mouth and tongue, but she is very hopeful for some new means of a cure. She feels that ultimately she will get well. In spite of all the disease processes, we have never been able to discover anything in the lungs. The diagnosis has been made through scrapings and the findings of the bacilli. The very interesting thing about this case is the long duration of the disease and the number of lesions which have developed in various parts of the body.

Dr. Harmon Smith, New York City: I do not think this was a tuberculous ulcer. It was in the median raphe, away from the border of the tongue, where irritation of a tooth would make an ulceration. It was a fertile field and one where tubercle bacilli would grow.

We should not confuse tuberculous fissures of the tongue and tuberculous ulcerations of the tongue with tuberculoma. It was about the location of the taste breakers in the median raphe.

Serial Frozen Sections of the Thorax from a Case of Aneurism of the Aortic Arch. Dr. George Fetterolf, and Dr. George W. Norris, Philadelphia.

The main points of interest in this report are as follows:

1. Photographs of the patient obtained at various periods during life showed successive steps in the growth of the protruding mass.
2. Frozen sections were made of a case which had had careful clinical study, and, as a result, conditions as they had existed in vivo could be accurately reproduced and deliberately studied after death. Search of the literature reveals the fact that this is the first opportunity of this kind which has arisen and been taken advantage of.
3. The exact site of rupture, and the cause and mode of death, could

be determined and depicted with a degree of accuracy, certainty and detail which would be impossible of attainment in an ordinary autopsy.

4. The hydrothorax, the pulmonary atelectasis, and the extreme dyspnea are explained in a manner which by any other method of study would have been much less satisfactory, if at all possible.

5. The last statement is equally true of the anatomic relations. The altered position and general changes in the bronchial tree and other thoracic contents are depicted in such a graphic manner as to show to the laryngologist and internist alike what does take place in the presence of such a lesion as this large aneurism. It also suggests what may take place in some of our future clinical cases in the presence of other disturbers of the normal intrathoracic relations.

DISCUSSION.

Dr. Greenfield Sluder, St. Louis: The labor in presenting Dr. Fetterolf's material is exceedingly great. We are constantly dealing with disturbances that seem trivial, which, if we bear in mind the relations within the chest, are frequently separated and put into a more serious category. It has been my experience within the past three months to, as it were, pick up two aneurisms of the aorta by virtue of dislocation of the windpipe, recognized in the laryngeal mirror, and a number of times I have outlined the same dislocations within the mediastinum, depressions of the windpipe, as a means of recognizing mediastinitis. Sometimes they are not of tubercular origin; more frequently I believe it to be tubercular. In one case that proved exceeding desperate, the infection was a primary tracheitis, going on for a length of time with mediastinitis and depression of the windpipe.

Stereoscopic Roentgenograms of the Head. Dr. J. M. Ingersoll, Cleveland.

The longer we have used the stereoroentgenograms, the more certainly have we been convinced of their practical value, for they give us definite information in regard to the nose and the nasal accessory sinuses, the brain and many of its blood vessels, the ear and the mastoid, which cannot be obtained in any other way. The size and boundaries of the maxillary and frontal sinuses can be distinctly seen. If there are any septa, tumors or foreign bodies in these cavities, they can be accurately located and defined. The ethmoidal and sphenoidal sinuses overlie each other, and are thus somewhat masked, but their position, relative to each other and the orbit and the other surrounding structure, can be clearly distinguished.

Skill in interpreting the roentgenograms can be more easily acquired by the surgeon than by the roentgenologist, for the surgeon has the decided advantage of being able to verify and correct the findings in the roentgenogram while he is operating. If the surgeon will carefully study the stereoscopic pictures before operating, compare his interpretation of the picture with the condition which he finds in the operation, and then study the picture again after the operation, he will soon acquire great skill in interpreting the stereoscopic plates.

In studying stereoscopic plates they should be examined from both sides. First, put the plates in the stereoscope with the film sides toward the mirrors. This will show the structures as we see them in the operation, with the external parts in the foreground and the deeper structures in the background. Then by reversing the plates in the stereoscope, turning the smooth sides of the plates toward the mirrors, the structures will be seen from the inside of the skull.

The technic for making stereoscopic anteroposterior radiographs through the frontal sinuses is described, as also the technic for making stereoroentgenograms of both mastoids on a single pair of plates.

These plates, when developed, are placed in the stereoscope, with the one having the right eye images in the right light box of the stereoscope, and the one having the left eye images in the left light box. With the glass side of the plates turned toward the mirrors of the stereoscope we view the mastoids from the inside of the skull, while with the film side of the plates placed toward the mirrors we view the mastoids from the outside of the skull.

DISCUSSION.

Dr. Robert C. Myles, New York City: Dr. Ingersoll has demonstrated it is much better than most of us believe it to be, and the topographic anatomy is shown better by this method than by any I know.

Dr. Hanau W. Loeb, St. Louis: It is really amazing how much more one gets to know about his work by studying one after another of the stereoscopic plates in every case which shows a disposition toward suppuration in any of the sinuses. It makes a man much better, even if he does not find in any particular case any essential value in the exposure. Taking the whole thing together, he develops an understanding of the subject far beyond what can be obtained by any other method.

The beauty of this work is that you can look at a case from before backward, or behind forward, by simply turning the plate around.

Dr. Lewis A. Coffin, New York City: I just want to say in regard to the stereoscopic picture that there is no question but that more interest and more knowledge is to be gained from it. We must remember, however, that a doctor often sends a patient in from twenty, forty or fifty miles, and unless he can come down where we have such an apparatus he cannot see the results. There are times, therefore, when he must put up with the other picture, which is more or less helpful. We cannot always have the stereoscopic roentgenograms.

Lantern Slides Showing Normal and Diseased Sinuses of Children from One to Fifteen Years of Age. Dr. Lewis A. Coffin, New York.

Dr. Lewis A. Coffin showed a double series of slides from x-ray plates of children's heads from one to fifteen years of age, one series showing normal and the other diseased sinuses. He said that one of the interesting things connected with the getting of the plates was the fact that nearly all the plates showing disease had been obtained from x-raying the heads of children from an eye ward of the Manhattan Eye, Ear and Throat Hospital without selection, that practically any case in that ward showed sinus disease, and he believed that this was strong presumptive evidence of the dependence of many eye conditions on the diseased accessory sinuses.

He called attention to the frequent involvement of the antrum, and stated that in this condition he saw the frequent cause of atrophic rhinitis and practically the universal cause of true ozena.

(To be continued.)

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ORIGINAL COMMUNICATIONS.

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VINCENT'S ANGINA.*

Dr. Thomas Hubbard, Toledo, Ohio.

The term ulcero-membranous tonsillitis is not comprehensive enough to displace the term Vincent's angina. The most serious type is not confined to the tonsils.

The disease, described first by Plaut and Vincent in 1894, has very gradually assumed a place in our clinical studies. Admirable papers have been published, notably by Mayer,[1] Halsted,[2] Levy,[3] Stark, Ira Frank and others, but the disease is still regarded rather as a pathologic *curio* than a common type of throat infection. It is worthy of remark that so many of the clinical articles are reports of very serious or fatal cases. This group of fatalities in a disease that is usually transient and curable, and taking into consideration the rather scanty literature, arouses the suspicion that a large number of cases are not diagnosed. In fact, I can recall several in my own practice which I now conclude were of the Vincent's angina type. Personal reports from other physicians confirm this impression. In other words, laboratory study of all ulcers and false membranes is necessary to positive timely diagnosis.

Spirillar infections are common in the mouth and throat and there are undoubtedly different types varying in pathologic virulence. The spirochete of syphilis is a protozoon and probably this is true of the spirillum found associated with the fusiform bacillus in Vincent's angina. If this be verified spirilli and fusiform bacilli may not be transmutation forms and on this question bacteriologists have not given the final decision. As stated, the experienced laboratory worker can differentiate between the *spirillum buccalis* the *s. dentium* and the *s. pallida* by the dark field condensor. And further, in all well-developed cases of Vincent's angina the diagnosis is aided by the abundant number of spirilli and fusiform bacilli to be found if searched for properly. If not discovered in the false membrane, scrapings from crypts and granulation tissue should be tried. Mouth, and particularly alveolar ulcers show spirilli of a coarse variety as well as fusiform bacilli and it does require some study and experience to eliminate this common type in making diagnosis.

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* Read before the Thirty-ninth Annual Congress of the American Laryngological Association, at Atlantic City, N. J., May 29, 1917.

The range of pathologic lesions attributed to the Vincent's group includes the pseudo-membranous tonsillitis or pharyngitis and ulcerative tonsillitis and also the malignant type as found in cancrum oris or "noma."[4] The disease process may invade the naso-pharynx or hypopharynx and larynx and also the esophagus. Cervical adenitis and phegmonous cellulitis may develop with more or less sepsis. In fact, Vincent's angina can cause a "rude awakening" about as shocking as any disease that I know of and it is a good thing to have a plan of attack all thought out beforehand, lest one be guilty of neglect of proper treatment, ill-timed overdosage with diphtheria antitoxin or convicting antisyphilitic medication. Some Vincent's angina throats so resemble diphtheria that one is tempted to ignore the negative Klebs-Loefler findings and waste precious time on serum, but probably the most common error is to resort to mercurials or the arsenical group and perhaps condemn the victim on the resulting therapeutic diagnosis. The arsenical group is destined to play a more and more important role in specific therapy and unless extraordinary care in diagnosis be taken some Vincent's angina cases will be labelled syphilitic because certain local throat symptoms melt away under the salvarsan treatment.

The study of spirillar types of infection is developing. African fever, relapsing fever, and yaws have already been shown related to syphilis. The universal use of spirocheticides will ultimately determine the therapeutic range of the mercurial and arsenical group. Depend on laboratory findings to avoid confusion of identity of the spirillar throat infections. Do not conclude that a man has syphilis because the throat ulcer or pseudo-membranous formation clears up under salvarsan until you have excluded Vincent's angina.

Levy has recorded a case resembling Vincent's angina in which it was impossible to determine the true nature of the throat lesion until secondary symptom developed with a positive Wassermann reaction. It would seem, however, that study under the dark field condensor should enable the expert to differentiate between the *spirillum of Vincent* and *s. pallida*. The necessity of careful study of all of these obscure cases is further emphasized by the strong probability that the arsenical group of spirocheticides exhibit a specific action in Vincent's angina quite comparable to the specific action in syphilis. There is not yet sufficient clinical data to verify this statement but it is rational and cases so far reported warrant thorough trial of this treatment.

And there is still another link in this chain that must be forged. Does Vincent's angina with marked systemic symptoms affect the Wassermann reaction? I cannot learn of any positive data bearing on this question. One case herein reported gave a negative reaction during acute symptoms and again two months after the attack of Vincent's angina. To settle this question many cases should be examined during acute, severe angina exhibiting the characteristic sepsis.

The spirilli and fusiform bacilli are anerobic and, as would be expected, are usually found associated with the cocci prevalent in all throat infections. Precisely the reciprocal role that each play cannot as yet be determined. The pathologic process may be that of more or less extensive pseudo-membranous formation or deep coagulation necrosis. The latter process, characteristic of anerobic bacilli, may progress beneath an apparently normal tonsillar surface. I have seen a case of Vincent's angina in a young man having large spongy tonsils progressing daily to a condition of sublingual edema with extensive cervical adenitis and sepsis in which one tonsil showed the ordinary pseudo-membranous deposit and the other looked like parenchymatous tonsillitis. It was not until the surface tissue collapsed into the excavation that I realized the extent of the necrosis and the cause of the sepsis. This accounts for the futility of local applications in the ulcerative type.

The disease is naturally self-limited but occasionally it lasts for weeks and deep cicatrices are the evidences of the extent of destruction, often involving muscular tissue. One fatal case, an adult, a strong, vigorous man, had an ulcerative process that involved the tissues behind the tonsil exposing the angle of the jaw and finally a large blood vessel was eroded. (This was prior to the discovery of salvarsan.) Local treatment was useless. Extraction of several teeth, curettement, and application of escharotics failed to check the necrosis. Microscopical study of the scrapings and sections of the removed tissue confirmed the diagnosis of Vincent's angina and excluded malignant neoplasm.

Febrile reaction and sepsis are usually manifested about in proportion to the degree of cervical adenitis. These symptoms and in fact the malignancy of the disease may be determined by the degree of mixed infection. In other words, an instance of *exaltation of virulence*.

The fact that the patient has another disease in which throat infections are usual, such as the exanthemata or, even a peritonsillar abscess, does not exclude Vincent's angina. Ira Frank reports a case of the latter type and Halsted concludes that some of the chronic ulcerations and pseudo-membranous conditions labelled diphtheria or scarlatina are probably Vincent's angina. More dependence on laboratory diagnosis would clear up some of these cases. I can recall such a case of post-scarlatinal ulceration in the tonsillar fossae which was probably due to spirillar infection.

Treatment. Stark of El Paso calls attention to perborate of sodium as an efficacious local medicament. The nascent hydrogen dioxide penetrates and disintegrates necrotic tissue and theoretically is an ideal inhibitor of anaerobic bacterial growth. Perborate of sodium is a constituent of the foaming dental powders and has stood this empirical test with credit. *S. buccalis* and *s. dentium* are present in pyorrhoea alveolaris and here hydrogen dioxide is particularly indicated. It is less of an irritant to the normal tissue and incidentally I can recommend it in all pseudo-membranous forms of throat diseases where peroxide of hydrogen is commonly used.

I have tried most of the antiseptic throat medications and must conclude that in the ulcerative necrotic type involving spongy tonsils they are unsatisfactory. The objections to strong antiseptics is that we are liable gradually to extend the area of invasion by destroying normal marginal tissue. Goodale has particularly cautioned against this practice in throat infections. This applies also to throat washes of all kinds. The local treatment resolves itself into careful applications *limited to the diseased tissue*. The *glycerole* of *iodine*[7] (iodide of zinc 2.—idoine 3.—aq. dest. 5.—glycerine, 10) applied to the tonsil crypts, is probably the most efficacious antiseptic. It has long been used in pyorrhoea alveolaris. It is the most penetrating iodine preparation that I have had experience with and of a consistency that enables one to limit the spreading to the sound marginal area.

To sum up the local treatment advocated: Powdered perborate of sodium rubbed into crypts and necrotic tissue, a saline gargle to remove debris, and glycerole-of iodine (Talbot) swabbed into all recesses with extraordinary care to protect the margin of normal tissue.

The majority of cases will yield to this treatment, repeated, of course, at proper intervals, but occasionally we will encounter the malignant type characterized by progressive necrosis in all directions and rarely, it must be remembered, invading inaccessible regions such as the lower respiratory tract and esophagus. I have not seen a record of involvement of the naso-pharynx but probably it occurs hidden by the swollen velum and tonsils.

This naturally leads to a consideration of systemic treatment and, fortunately, we have something apparently dependable in this line. Theoretically the arsenical group is specific in action and I think that experience is proving favorable. Take this type of the disease. A young man of 20 having large tonsils presented a throat that was so strongly suggestive of syphilis that a Wassermann was indicated. One tonsil was covered with necrotic false membrane, and the other enormously swollen and general cevical adenitis was in evidence. Blood-test negative, and local treatment for several days made no impression on the disease. The sublingual tissues became edematous, threatening Ludwig's angina. The collapse of the swollen tonsil surface into the necrosed fossa explained the cause of progress of the local and progressive sepsis. He was given a hypodermic of cacodyllate of sodium (3 gr.) two doses in two days and the improvement in the local condition was noticeable in 48 hours. The sublingual edema subsided and the tissues cleared up precisely as a syphilitic lesion melts away under mercurials. There was little or no indication for local treatment after three days. The throat healed with deep cicatricial evidence of true necrosis. One tonsil was more than half destroyed. This case, and several others observed in my own practice and seen in consultation, rather convinced me that this treatment, cacodyllate of sodium, 2½ to 5 gr. repeated next day (if urine is normal) is rational and probably it is good practice to try this out in all severe cases that do not yield promptly to all local treatment outlined.

There are cases, however, which need salvarsan intravenously to effectually check the ravages of the spirilli and associated germs. A case of this type: A young woman of a clean health record developed tonsillitis with a nasty, foul-smelling exudate. The tonsils, seen prior to illness, were no larger than small chestnuts and had small crypts. They swelled enormously, filling the throat; the odor became intolerably bad. Smears and cultures were negative to diphtheria bacilli (three times) and positive as to the Vincent's organisms. Smears showed the presence of spirillar and fusiform bacilli, abundant and in almost pure culture in granulations and exudates from both tonsils. Local treatment over a period of several days was without effect. She was becoming quite septic and half starved. The cervical glands, anterior and posterior, were enlarging and tender. The characteristic odor permeated the room and I was strongly tempted to ignore the negative diphtheria findings and give diphtheria antitoxin. The cacodyllate of sodium had been given and two doses made no impression on the disease, and more serious septic symptoms were developing; fever, prostration and feeble heart action (85 and mounting to 130) on slight exertion. Dr. W. J. Stone saw the case with me and neosalvarsan, 0.6 gram. (equal to 0.4 gram. salvarsan) was given intravenously (weight, 120 pounds). The reaction was quite alarming: Temperature, 105; chills and some nausea; moderate delirium lasting eighteen hours. There followed a phenomenal subsidence of all throat symptoms. The left tonsil was found to be destroyed almost to the capsule and the right to lesser degree. All necrotic tissue sloughed away in a few days. The urine contained albumin and the patient was very weak for some time. In less than a week the throat was almost normal but the patient made a slow recovery from the general septic shock. Two months later Dr. Stone made the Wassermann test just to verify our diagnosis and, as suspected, it was negative. Four months later I enucleated the tonsils under general anesthesia and on section of tissue no spirilli were found.

It happened that Dr. Stone had a short time previous to this experience, a fatal case of this type of angina in a young, pregnant woman in whom a simple pyorrhoea alveolaris gradually developed into a septic phlegmon of the lower jaw and sublingual tissue—a horrible death from sepsis, and strangulation—and then decided to use salvarsan in spirillar infections. The case detailed above presented a hopeless condition prior to the administration of neosalvarsan. The improvement following was comparable only to that which we see in diphtheria following a proper dose of antitoxin.

Specificity of salvarsan and neosalvarsan in all spirillar infections is highly probable but a considerable number of cases must be observed before a positive opinion can be ventured.

In conclusion, I would emphasize the following:

Pseudo-membranous and ulcerative angina should be studied in the laboratory for the purpose of differentiating between diphtheria, syphilis and Vincent's angina. In doubtful cases the dark field condensor will aid in distinguishing the spirillum of Vincent from the *s. buccalis* the *s. dentium,* and the *s. pallida.*

The local treatment of Vincent's angina recommended is perborate of sodium in powder, a mild, non-irritating gargle like Dobell solution, and glycerole of iodine applied only to necrotic or false membrane areas. In cases that do not yield promptly to this treatment, cacodyllate of sodium 2½ to 5 gr. repeated in 24 or 48 hours (if the kidneys are not affected). In the malignant type, not improving under the above treatments, give neosalvarsan 0.6 grm. (average body weight adult) intravenously.

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515 Nicholas Building.

Inducing a Child to Open Its Mouth.

The rough, brutal and often unsuccessful methods of inducing a terrified child to open its clenched jaws, for intubation, inspection of fauces or other purposes, would never be inflicted if the simple, painless and always successful method followed for years in Dr. Chevalier Jackson's clinic were known. A seven-inch bent probe is introduced at a gap between or posterior to the teeth and pushed backward until the distal end of the probe reaches down back of the tongue near the epiglottis. This causes the jaws and mouth at once to open. A bite-block or gag is then inserted.

THREE CASES OF STRICTURE OF THE ESOPHAGUS DUE TO THE ACCIDENTAL SWALLOWING OF CONCENTRATED LYE SOLUTIONS.*

Dr. Charles J. Imperatori, New York City.

The following three cases of cicatrical contraction of the esophagus are illustrative of the practical diagnostic methods of arriving at the location of the lesions and the safer procedure in treatment, in overcoming the stenosis, incident to the contraction.

Case 1. Clara M., aged four, accidentally swallowed about four ounces of concentrated lye solution on June 15, 1915. For several days following the accident, she could swallow but a few teaspoonfuls of water. For the following six months and up to the time, that I saw her, which was in December, 1915, she ate nothing but strained soups, gruels, and milk. Swallowing these fluids took considerable effort and her first appearance at the Hosital, showed her to be considerably undersized and emaciated.

Endoscopic examination, at this time revealed a stricture, situated 15 to 16 cm. from the upper teeth, this distance, in a child, probably locating the lesion between the aorta and the left bronchus. The orifice of the stricture, which was more to the right, was just large enough to get the filaform guide of the Sippy instrument through it. There was some ulceration just below the stricture. Silver nitrate, 360 grs. to the ounce, was applied once and later several applications of argyrol were made. Within two weeks the ulceration had healed.

Gradual attempted dilatation, twice a week with the 18 Fr. olive of the Sippy instruments finally passed through after three sittings. At each succeeding sitting larger sizes were used, until a 28 Fr. was used. Later Bruenings flexible bougies were used, and now, no difficulty is experienced in using the esophagoscope as a dilator.

In the early dilatation of this case, the Jackson-Guisez bougies would have been used, but they were not available. To attain the present degree of dilatation it was at first done twice a week for about six months, then once a week for the same length of time, and lately, once every two weeks.

The patient is in good condition now, eats everything, without any effort in swallowing or any occasional impaction of food. Apple skins and beefsteak are swallowed as though she never had a stricture.

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* Read before the Section on Laryngology and Rhinology of the New York Academy of Medicine, Feb. 28, 1917.

Examination of the esophagus with the small Mosher ballooning esophagoscope, reveals the site of the stricture 15 cm. from the upper teeth, with a diameter of the esophagus at this point of about 11 to 13 mm.

A radiograph was taken at the beginning of the dilatation but unfortunately was lost. The radiograph taken about two months ago shows the location of the stricture and confirms the endoscopic findings.

Case 2. Luke C., aged 21 years, accidentally swallowed about two ounces of concentrated lye solution on September 2, 1916. The immediate treatment that he received was somewhat heroic, in that he drank over twelve quarts of vinegar water during the first twelve hours following the accident.

Although he suffered considerable pain, he was able to swallow fluids for two weeks following. At this time he suddenly found that he could not swallow. This aphagia persisted for two days, during which time he suffered very much from water hunger.

Blind bouginage, using a No. 2 Bruennings (this being the largest bougie passed), was passed daily for three weeks. At this time a piece of chicken bone became lodged in his gullet, probably at the site of the stricture. No attempt was made to remove the bone and fortunately it was expelled the following day. For five weeks nothing was done.

The patient was first seen November 25, 1916. He was just able to swallow and as it took such an effort he ate but one meal a day.

A radiograph taken at this time confirmed the endoscopic findings, which showed a stricture with some ulceration above it, at 27 cm. from the upper teeth.

The size of the stricture was less than an 18 Fr. olive. The ulcerations were touched with silver nitrate, 360 grs. to the ounce and later with argyrol. As suggested by Jackson, a calomel and bismuth subnitrate powder, 1/4 gr. of the former and 10 grs. of the latter, was given four times a day. The ulceration healed within ten days. After three months bouginage, doing it somewhat irregularly, we have been able to dilate this stricture to a 28 Fr. Before dilatation was begun, a radiograph was taken by Dr. Law, confirming the location and extent of the stricture.

Case 3. A. J. B., aged 28 years, accidentally swallowed about a mouthful of concentrated lye solution when he was twelve years old. For two days following the accident, he could not swallow even water. He remembers having a very small diameter bougie passed every day for six months and then for a period of over eighteen months, every other day. Thiosinamin was injected every day for six months and electrolysis was done several times. For the three years following the accident his diet consisted of strained gruels. The greatest dilatation that was done at this time, he feels certain, was never larger than 18 Fr.

When 15 years old, some food became impacted in his "throat" and after being there some time he found, that by grasping the upper part of his neck, just below the jaw, and squeezing and swallowing at the same time he was able to force the food down. Later this became a frequent happening but he was always able to overcome the impacted food and eventually get it down.

When about 16 years old, he began to notice the pouching in his neck under the jaw. This is a development of the muscles attached to the hyoid bone and jaw. He had nothing done for thirteen years, always managing to force the food down. Of course it took him some time to eat a meal and even with good mastication, he occasionally has had food impaction.

Specular examination of the lower pharynx showed slight sacculation laterally, and about 2 cm. below the cricoid, a stricture of not over 5 mm. in diameter was seen. As it was impossible to pass an esophagoscope through, for purposes of record a radiograph was taken by Dr. Law and another stricture demonstrated 34 cm. from the upper teeth. Dilatation of the upper stricture was begun in the early part of December, 1916. After several attempts a bougie the size of which was equal to a 15 Fr. was passed through the stricture. He has been dilated with a mechanical dilator, so that at present we are able to easily get a No. 10 Ingals-Mackenzie bougie through the upper stricture and have begun dilatation of the lower with this same instrument. The improvement in this man is marked.

Of course all of these cases will need considerably more dilatation, with an occasional endoscopic examination and bouginage for some time. It may be noted that all the instrumentation was done without an anesthetic, either local or general. These cases were seen at the Manhattan Eye, Ear and Throat Hospital on the service of Dr. Harmon Smith.

Conclusions. The reason for reporting these cases is to draw attention to the severe after results of the caustic on the tissues of the esophagus, the rarity of the necessity of doing a gastrostomy, and the method of treatment of these strictures that is safest and easiest in overcoming them.

Regarding the immediate treatment; no bouginage should be attempted until the immediate effects of the burn have subsided and repair of the injured tissues has begun. Water hunger can be overcome by the Murphy drip and nutrient enemata. Usually within three to five days small amounts of fluid can be swallowed, without great discomfort. From this time on the patient will gradually begin to take a more liberal and regular fluid diet. Of course, should this treatment not prove of avail, gastrostomy should be done.

Later treatment is undertaken as soon as repair begins to take place, and we know this by the patient being able to take more freely of a liquid diet. The mucous membrane should be inspected in order to ascertain the extent of injury and the amount of repair under way. Ulcerations should be touched up with silver and argyrol solutions. As soon as these ulcerations begin to heal, bouginage *per tubam* should be commenced. By the use of the esophageal speculum and the esophagoscope the orifice of the stricture may be located and a filiform passed through without traumatizing the parts, as is usually done when dilating blindly. The dilatation may be started with the use of olives threaded on the filiform. For these very small strictures, the use of the Jackson-Guisez bougie is very satisfactory, particularly in those strictures under 18 Fr.

The Sippy set of olive, carrier and filiform is very useful, for safely dilating those strictures in sizes over 19 Fr. The bougies of Ingals-Mackenzie for the dilatation of those strictures from 30 Fr. up are useful, their ovoid shape rendering them easy to pass behind the larynx, and they may be left in situ, for a length of time, without much discomfort to the patient. Mechanical dilators are useful, but for most cases, even the difficult ones, the above mentioned dilators will be found to suffice.

Blind bouginage for the smaller strictures, that is, say arbitrarily under 18 Fr., is not a safe procedure. Cases that will swallow a thread to be used as a guide, can always be dilated with the Jackson-Guisez instruments with much more satisfaction to the patient and the operator. While it may seem unnecessary instrumentation to those who have successfully dilated these strictures by the sense of touch, we know and hear of cases continually that have had the wall of the esophagus accidentally punctured by blind bouginage and usually with fatal results.

Without any doubt or question, this method as suggested and practiced by Jackson, that is "bouginage per tubam" is the safest procedure to be used, especially in the smaller strictures in what at best is a difficult undertaking.

17 East Thirty-eighth Street.

CLINICAL OBSERVATIONS ON A NEW IODINE PREPARATION "IODOSAN."*

Dr. M. D. Lederman, New York City.

About two years ago my attention was called to a new iodine powder originated by Dr. Nathan Sulzberger, a chemist of this city. He stated that his preparation differed from other iodine powders generally employed, in that the iodine content was most readily liberated, not being chemically bound as in other iodine powders.

On the basis of preliminary clinical reports received abroad, while engaged at the time in laboratory investigation, he informed me that this powder had acted with very good results in suppurative conditions in the nasal cavities, due to its great solubility in the secretions, liberating its active element without retarding drainage.

Several bottles of the powder were sent to me at that time for clinical investigation. Appreciating the penetrating properties of iodine and its active disinfectant and antiseptic qualities, I decided to test its merits in chronic suppurative disease of the aural cavity, where the advantage of free iodine liberation without the danger of retarded drainage, should prove of especial value.

My own results and those observed by a few colleagues to whom I gave some of the powder for clinical observation, show this new iodine preparation to possess decided active antiseptic properties, which appear in rather a prompt manner without disturbing drainage. The powder is an intimate association of iodine and boracic acid, prepared after a special technique, thus combining the therapeutic properties of both these serviceable agents. The powder is of a more or less brownish color, depending upon its iodine content, which may be varied in widest limits to suit special requirements. I have employed it in a two to ten per cent strength in the ear and nose, but found that the latter was too strong in the general run of cases, except in some instances of atrophic rhinitis where it could be applied without previous local anesthesia. The five per cent powder is very effective, and is usually well tolerated in the chronic suppurative otitis cases. The smarting sensation experienced at times can be avoided by preceding the use of the powder with a few applications of cocaine solution.

When exposed to air, the powder soon becomes lighter in color, showing the ready elimination of the iodine. When treated with cold water, it imparts a brownish color to the solution, which action also takes place when the powder comes in contact with the secretions or with the mucous membrane itself. When applied to the moist middle ear, the preparation is readily taken up and its activity begins. At times, in sensitive individuals, a smarting sensation may be experienced, but this passes away in a short time. In the more chronic cases this symptom is seldom mentioned. In some instances the powder was not visible in the ear twenty-four hours after its application, showing how readily it dissolved in the secretions. In a few of my cases the powder has acted with surprising rapidity, while in the more chronic cases it required longer treatment to accomplish the desired result.

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*Read before the Otological Section, New York Academy of Medicine, February 9, 1917.

*Jour. A. M. A., October 26, 1916.

If properly kept, its activity may last for quite a time, as I have used some of the preparation two years after it reached me, and obtained satisfactory results. Like all iodine products, it should be applied by means of hard rubber or glass powder blower, to avoid coming in contact with any part of the instrument of a metallic nature.

The method employed in treating the aural cases was very simple. All secretion was removed from the canal, and as much as possible from the middle ear, by means of the aural cotton armed applicator and suction. At times, some peroxide of hydrogen was used to soften the hardened secretion, and the parts dried as thoroughly as possible. The powder was then blown into the middle ear, if the opening in the membrana permitted. To have the powder reach as much of the mucous membrane of this cavity as possible, I followed the application of the powder with about ten pounds of air pressure, then blew in some more of the remedy to cover the site of perforation. No home treatment was carried out unless the purulent secretion demanded such attention or the patient was unable to come for treatment in two or three days. Then, simple cleansing at home with peroxide of hydrogen, followed by drying the canal of the ear as well as possible with cotton wicks. The powder was introduced into the canal through a paper cone. It was frequently possible to dispense with home treatment.

An interesting paper recently published by Dr. Robert A. Lambert of this city on "The Comparative Resistance of Bacteria and Human Tissues to Certain Germicidal Substances,"* has an important bearing upon the value of iodine as an ideal antiseptic. His experiments consisted in subjecting infected and non-infected tissues, removed from the body, to the action of various chemicals, including most of the germicides in common use. The relative resistance of bacteria and cells was determined by incubating the treated tissues in tissue culture preparations. In the clotted plasma, both cells and bacteria which survived exposure formed a suitable medium for growth. In such experiments, cells and bacteria are exposed under practically the same conditions as obtain in an infected wound bathed in an antiseptic solution. Staphylococcus aureus was the organism used. Human tissues were used throughout the experiments, since it seemed that the results would be of more practical value than if tissues of lower animals were employed.

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* Jour. A. M. A., Oct. 26, 1916.

Of the ten different germicides mentioned in the table given by Dr. Lambert—including mercuric chloride, potassium cyanide, sodium hypochlorite (Dakin), phenol, hydrogen peroxide, and others—he states that iodine stands out as the one germicide toward which cells were found to be more resistant than bacteria. It was possible by the use of a solution of iodine of suitable strength (1-2000) to kill the organisms in infected tissue without affecting more than slightly the growth of the cells. A 1 to 1250 solution destroyed the cells. In all the other germicides mentioned, weaker solutions than those effective against the bacteria destroyed the cells. The low bactericidal power of hydrogen peroxide was rather astonishing. A 1 to 1000 solution killed the cells, while it required a 1 to 50 solution to act in a similar manner on the bacteria. Dr. Lambert remarks that we must bear in mind the fibrin dissolving property of iodine in the healing of wounds, as fibrin serves a useful purpose in plastering together wound surfaces.

The iodine powder under consideration was also employed as an application to mastoid wounds, and it kept them clean and shortened the time of healing. In atrophic rhinitis, it retarded crust formation and stimulated the mucous membrane so that the cavities were more readily cleansed. It has also been used at Lebanon Hospital in a number of slow-healing fistulae, following abdominal surgery, the wounds closing satisfactorily after a few applications. Good results were also observed in obstinate sinuses following incision for infected breasts.

Case 1. September 14, 1914. D. O., male, 35 years of age, had o.m.p.c. off and on for fifteen years or more in the left ear. For the last five years, had some secretion with foul odor. No pain or other subjective symptoms. Hearing, fair. Examination showed a large, kidney-shaped perforation of the posterior portion of the membrane, with granulation protruding, odorous secretion bathing granulation and draining from opening in the drum and mucous membrane considerably thickened. A probe detected exposed bone in the posterior wall of middle ear.

Treatment. Removal of granulation tissue; insufflation of iodine powder, 10 per cent. As cocaine had been employed for the removal of the polyp, no unpleasantness was experienced at this visit. Two days later, after drying the middle ear, the 10 per cent powder was again employed, but in a few minutes considerable discomfort was felt, which lasted for half an hour or more. The treatment was continued with the powder after cocain anesthesia, and in six treatments the ear was dry.

Case 2. September 28, 1914. J. R., male, 46 years of age, o. m.p.c. in left ear, of a year's duration, following influenza. Hearing lowered. No pain or other symptoms excepting aural suppuration which required attention at times.

Examination. Perforation in lower posterior quadrant, with some granulation tissue protruding; secretion bathing floor of canal and membrana.

Treatment. Removal of granulation tissue and application of 10 per cent powder. Ear dry after seven treatments with the powder.

Case 3. November 6, 1913. S. P., o.m.p.c. in left ear for over ten years. Had a radical mastoid operation performed in 1906, at one of our special hospitals, which was followed by facial paralysis. This condition was not present when patient came under my observation. Ear has secreted off and on since this operation.

Examination. Middle ear covered with skin except at Eustachian orifice, and at upper and lower areas in posterior portion of middle chamber. These pockets were secreting mucu-purulent discharge. The probe found exposed bone at both sites.

After trying various therapeutic remedies without much success, the iodine powder reached me at about this time and was used. In about a dozen treatments, the ear became dry and has so remained. The 10 per cent strength was applied without any discomfort being experienced, no anesthetic being employed. In this case, the entire cavity of the middle ear was filled with the powder, after first cleaning and drying the suppurating areas very carefully.

Case 4. J. H., 8 years of age, was referred to me from one of our large cities on March 26, 1914. Following an attack of chickenpox a year previous, he had an acute suppurative otitis in the left ear, with spontaneous perforation. The discharge soon subsided. Two weeks later he was taken ill with measles, and the aural suppuration reappeared and lasted for two months, but it ceased during the summer. During September, 1913, the patient had a catarrhal attack, again followed by the aural discharge, which has persisted in spite of special treatment.

Examination. Perforation of the antero-superior quadrant, with muco-purulent secretion in the middle ear, mucous membrane congested. Advised removal of adenoids and diseased tonsils. This treatment was carried out at the patient's home, together with local treatment by a competent aurist.

Three months later, I again saw the young man and found a small polyp protruding from the perforation, which was removed. Muco-purulent secretions still present. Bacteriological examination showed the presence of staphylococcus pyogenes aureus and albus, from middle ear secretion. Auto-vaccine treatment was suggested, and an x-ray examination was advised. The latter was made at home, and the report stated that there was some haziness around the antrum, and the line of the sinus was obliterated, but no general mastoid involvement. The attending aurist suggested a simple mastoid operation and drainage of the middle ear from behind, before removing any of the ossicles, if the suppuration did not let up in a reasonable time. About this time the patient was again brought to me, and though the hearing in the affected ear had improved, there was considerable muco-purulent secretion. The 10 per cent iodine powder was applied after the usual cleansing process, but caused considerable pain, which was relieved by the local application of cocain solution. Three daily treatments were given after carefully drying the cavity, preceded by the cocain solution, and the ear became practically dry after the third treatment. A month later the ear was perfectly dry, and has so remained up to the present time. The action of the powder in this case was astonishingly effective.

Case 5. Mrs. X., 50 years of age. In 1904 the patient came to me for an old middle ear suppuration (right ear) which had existed for a number of years and had not responded to previous treatment. After removing granulation tissue and diseased ossicles, the suppuration was arrested, with an improvement in the hearing. The treatment extended over a few months. In April, 1916, following an attack of influenza and diabetes, I was called to examine the patient's throat and also found a suppuration of the ear which had not caused any discomfort or local symptoms. It was quite odorous, and had evidently existed for some time in the middle ear, but had not appeared externally. In this case, the 5 per cent iodine powder arrested the suppuration in ten treatments. Since these cases were treated, I have found that a two per cent powder is just as effective without causing local discomfort.

58 East Seventy-fifth Street

TONSILLECTOMY IN THE TUBERCULOUS.*

Dr. Frank L. Dennis, Colorado Springs, Colo.

Not infrequently one reads a statement emphasizing the importance of correcting all diseased conditions of the nose and throat in sufferers from pulmonary tuberculosis, with the object in view of influencing favorably the general course of the chest trouble.

Thus, Anderson[1] in an article on "The Importance of Correcting Pathological Conditions of the Nose and Throat in Patients who have Incipient Tuberculosis," after speaking of the three cardinal principles in the treatment of tuberculosis, viz: food, fresh air, and rest, says: "A carefully regulated diet may be prescribed with digestants and stomachics to encourage the stomach to perform its functions; but if the tonsils are hypertrophied, with septic accummulations in their crypts, or if there is muco-pus in the nose or sinuses, we know that the digestion will be impaired." Again, "There is such a close relation between the upper respiratory tract and the lungs, that any abnormal condition of the nose and throat should receive careful attention." "Diseased tonsils are a source of great danger to tubercular persons." Many other writers have made similar observations. I remember distinctly during my early days in this community, hearing our own Dr. Solly call attention to this point in a meeting of the county society.

I have been unable to find, in a rather superficial examination of nose and throat literature extending over the past ten years, any reports giving definite data on what the effect of removng tonsils has on pulmonary tuberculosis. Anderson himself, in closing his article, says that he could cite cases illustrating these principles but the reports would not be conclusive as other measures directed against tuberculosis have been used.

In the study of a few cases from my own practice I have had great difficulty in estimating what the direct results on the tubercular lesion has been for the following reasons:

First: Some cases were well on toward recovery when the tonsil operation was done and their improvement continued afterwards. It would be manifestly unfair to say that this improvement would

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(1) Anderson, Willis S.: Annals of Otology, Rhinology and Laryngology, 1907, XVI, 128.

*Read before the Western Section of the American Laryngological, Rhinological and Otological Society, Colorado Springs, March 17, 1917.

not have continued had the tonsils not been removed or even perhaps to say, that it progressed the faster because of the operation. On the whole, however, the reports from the attending physicians who referred the cases to me have been distinctly favorable and although couched in general terms and being for the most part only "impressions" rather than provable facts, are, on that account none the less valuable.

Second: In many cases the lack of available information as to the exact condition of the patient before operation and the absence of accurate observation afterwards.

Third: The impossibility of judging exactly what effect the operation has had on the tubercular process.

I have collected notes of thirty-four cases from my records. Of this number there are no notes procurable after the operation in twelve as the patients disappeared from observation. Of the remaining twenty-two, the results are distinctly good in seventeen, poor in three and of no effect in one. In one of the cases tuberculosis was not recognized at the time of operation but was demonstrated soon afterwards; in five there was a laryngeal tuberculosis, in one tuberculosis of the pharynx and in one middle ear tuberculosis. Ether was the anesthetic in five of the cases, local anesthesia being used in the others. It is significant to note that two of the five cases, who had ether, did badly afterwards (cases 8 and 14), although in one (case 14), tuberculosis was not known to be present at the time of operation. The other three did equally as well as the locally anesthetized ones. Three of the cases were in persons with long standing lung tuberculosis which had become quiescent and in half of all the cases the patients' lung condition was quiescent. Only two of the cases were classed as incipient, the remainder being mostly in the second stage and a few in the third stage.

The following is a brief synopsis of some of the cases:

Case I. Mrs. L., came to Colorado in July, 1913, with a third break-down from tuberculosis and was seriously ill. She had a high temperature for months. She gave a history of rheumatism, pyorrhea and tonsillitis. The tonsils were removed under local anesthesia in August, 1914. The patient has remained well since and has been living in the East for several years. Operation was undertaken after the pulmonary disease became quiescent. I do not attribute this patient's recovery to her operation. It may have contributed to her immunity since.

Case 2. Miss M., active, has had tuberculosis for several years; second stage case. Occasionally she has temperature and slight hemorrhages; frequent attacks of pharyngitis, tracheitis and an annoying cough; rheumatism in knees. Tonsillectomy under ether in September, 1916. She has been much improved since and her physician reports that her chest is in better shape than ever before. No more attacks of tracheitis and pharyngitis.

Case 3. Mr. H., in the second stage of tuberculosis, has been here over two years; frequent attacks of tonsillitis accompanied by exacerbations of the lung condition; tonsillotomy one year ago. He has tonsil stumps containing caseous crypts, enlarged cervical glands and small amount of adenoid tissue. Operation, October 17, 1906. His physician reports that after the operation he has had no more sore throats and exacerbations of the pulmonary trouble. The doctor thinks he did much better from that time on.

Case 4. Dr. S., active, has had pulmonary tuberculosis for years; has had for weeks a slight temperature as high as 100.4°; pyorrhea; cheesy plugs in the tonsils. Operation under local anesthesia in April, 1915. Temperature was 101° for a few days afterwards but soon came down to normal. His physician reports he did much better following operation and better still following the removal of two teeth with apical abscesses four months later. Soon went to work and has continued working since.

Case 5. Mr. P. is a second stage patient and was not doing very well; frequent elevations of temperature, slight hemorrhages and hoarseness. He has very large tonsils full of cheesy matter. Operation under local anesthesia, November, 1913. He has had fewer exacerbations of temperature and hemorrhages and soon recovered. Has been well since. This cannot be regarded as a quiescent case though a time of apyrexia was chosen for operation.

Case 6. Mr. B., active, second stage case, not doing well and had an unfavorable prognosis from his physician. A great deal of tickling in his throat; frequent sore throats. His large buried cryptic tonsils were removed in January, 1914, under local anesthesia. He has now been hard at work for two years. His cough was diminished two-thirds after operation. Doing well.

Case 7. Mr. R., has had tuberculosis of lungs for several years. He is an arrested case and has been at work for two years. Frequent coughs, tonsillitis and bronchitis; coughing a great deal. Temperature 99°. Operation, under local anesthesia, in January, 1917. No cough or temperature since operation and practically no post-operative soreness.

Case 8. Miss A. Tuberculosis for six years. Has done only moderately well. Diseased tonsils and enlarged cervical glands. Very nervous about operation, which was done under ether in May, 1916. She took the anesthetic badly and was very cyanotic. Patient reported in July that she had cough and temperature for five weeks following operation, but is feeling well now. Spent several weeks in New England during the past winter where she had an attack of influenza, returning in February with renewed activity in lungs.

There is no doubt that the lung condition was lighted up by the effect of the ether in this case although this possibility was considered by her family physician and myself and it was decided for other reasons to take the risk. She apparently recovered from that flare-up and the present condition is, no doubt, directly due to the unfavorable environment and her activity while she was east.

Case 9. Mr. S. has been tubercular for one year; hoarseness. throat sore. Has large buried cheesy tonsils which were removed under local anesthesia in February, 1914. One month later he complained that his throat was sore. He had an inflamed spot in both tonsil fossae which aroused the suspicion of a tubercular infection at this point. This got somewhat better and the diagnosis was never confirmed as the patient left here and I have no report from him since. His larynx showed distinct signs of tuberculosis in March.

Case 10. Dr. C. Active tuberculosis of the lungs for one year and of the larynx for eight months. Afternoon temperature 99°: cough, expectoration, lungs moist. Large cryptic cheesy tonsils removed with local anethesia in June, 1912. One month later the cough had decreased and the temperature ceased. In September he went to work and has been at work since. No active signs for years. Voice almost normal. This man was evidently greatly helped by the operation.

Case 11. Mr. B., first seen in February, 1916. Second stage case. He has had lung tuberculosis and hoarseness for five months. His larynx and one ear are tubercular. Under treatment the larynx and ear improved considerably as did his lungs, although he had wide-spread trouble. His large and diseased tonsils were removed in an effort to affect favorably his tubercular condition. Operation on November 7, 1916, under local anesthesia. A good deal of troublesome hemorrhage complicated the operation and the pillars on both sides were sutured over gauze. Notwithstanding this, a secondary hemorrhage occurred a few hours later on the right side and more packing and sutures were necessary. A large hematoma in the soft palate resulted and altogether the patient had a very trying time. For two weeks, prior to operation, his temperature had varied between 98° and 99°. Following the operation it rose to 100° for one day, was 99° the next day and did not go above normal afterwards. The patient went to work in January and is generally doing well, although his laryngeal condition was worse for a time. This is now better but is still being treated. The ear is dry with a small perforation. This patient went to work against advice as his condition is not such as to warrant it, yet he is really holding his own very well. He also developed a suspicious-looking spot in one tonsil fossa a few weeks after operation which has now healed completely.

Case 12. Mr. M.; third stage case. Has tuberculosis of the posterior pharyngeal wall and a small tubercular ulcer on the left tonsil. Against my judgment and advice the left tonsil was enucleated under cocaine anesthesia and tuberculosis of the wound promptly developed. Patient was desperately ill and died two or three months later.

Case 13. Mr. C. has had fibroid phthisis for three or four years. Second stage case. No temperature for three months; very little cough or expectoration but is annoyed by a constant "clearing" of his throat. Small buried tonsils were removed in September, 1914, under local anesthesia. The most annoying "clearing" was not influenced by the operation nor by any other measures, including treatment through the bronchoscope and by intratracheal injections. His general condition is good and he has been at work on a ranch for two years.

Case 14. Child, three years old. Seen first with acute tonsillitis. Cervical glands not enlarged at the time but were palpable two months later, at which time the operation was performed under ether anesthesia. Patient did not pick up after the operation and six months later the attending physician reported that it was running a temperature of 99° to 101°, the reaction to tuberculin was positive and there was probably tuberculosis of mesenteric or bronchial glands. Subsequent history unknown.

In operating upon these tubercular cases, certain precautions should be observed. A time should be chosen for operation when the general condition is favorable and the lungs are relatively, at least, quiescent. Ether should be avoided whenever possible. In certain nervous cases it seems imperative to give a general anesthetic because it is a question whether the psychic shock is not greater in these with local anesthesia, especially if troublesome hemorrhage is to be expected. Although it cannot be mathematically proven that the lung condition is directly influenced, the universal opinion of all who have observed these cases is that they get along much better afterwards. There are many cases who reach a certain point in their improvement from the lung lesion and get no further and who, after a needed tonsillectomy, find their general resistance so increased that they proceed more rapidly to a full arrest of the disease. Laryngeal tuberculosis *per se* is certainly no contra-indication to operation and is many times much helped by a tonsil enucleation. In the presence of actively spreading ulceration of the larynx, especially when involving the epiglottis, one would avoid operation. But with a healing larynx or one with only slight involvement, operation may be undertaken if other conditions are favorable. The presence of tubercle bacilli in the sputum is no contra-indication, but in the presence of copious expectoration, I should feel, there is more danger of wound infection.

The post-operative care of the wound is especially important. It has been my custom to apply tincture of iodine once or twice daily until cicatrization is complete and in one case the whole surface was painted with trichloracetic acid immediately after the operation. I once saw a galvano-cautery used in the same way.

After reviewing my experience and that of my colleagues in this region, I feel justified in the belief that tonsillectomy in these cases, when indicated (and the indications for operation are practically the same as for the non-tubercular cases), is practically devoid of danger, either from local infection or from lighting up a slumbering process in the lungs, provided one uses ordinary judgment in the selection of cases. Of course, no one would think of operating in the presence of marked activity in the lungs as manifested by fever, rapid pulse, sweats and declining weight and strength. But a time can be chosen when these symptoms and signs are in abeyance and then good results may be expected.

501 North Tejon Street.

COMPLETE UNILATERAL DEAFNESS RESULTING FROM ACUTE PAROTITIS. REPORT OF A CASE.

Dr. George H. Willcutt, San Francisco.

As so few cases of this interesting condition, especially in adults, have been reported in the medical literature of the past few years, the writer wishes to present the following report in hopes that it may be of interest to the general practitioner as well as the otologist. Osler, in his "Modern Medicine," states that of the ear complications of acute parotitis, deafness is the most frequent. Texier has collected thirty-four cases of deafness following mumps and in seventeen of these it was bilateral, the other 50 per cent being unilateral. In many of these cases there was tinnitus and "buzzing in the ears." In thirteen cases vertigo, lasting from a few hours to a few days, was present and in four cases there was vomiting. The deafness comes on about the fourth or fifth day, sometimes as late as the tenth or fifteenth day.

It is not the purpose of this paper to discuss the pathology of this condition or to locate its primary lesion as a great diversity of opinion prevails among those who have studied the condition as to whether it is in the middle-ear or in the internal-ear and the study of a single case will not allow of a definite conclusion.

Case Report: Mrs. L. H., 29 years of age, occupation, clerk. No ear disease as a child. No pain in the ears at any time. Normal hearing when examined for employment with the telephone company seven years ago. Had measles and whooping-cough in childhood. Recurrent attacks of tonsillitis during girlhood. Has one child 10 years old. No miscarriages.

May 27, 1916, acute parotitis developed. Swelling bilateral and equal. No temperature. (Family physician attending.)

May 29, attack fully developed. Acids caused great distress.

June 2, nausea, vomiting and vertigo all day. Unable to lift her head from the pillow.

June 3, nausea and vomiting in the forenoon. Drank broth at noon. Vertigo continued but to a lesser degree.

June 4, no vomiting, only slight nausea. Vertigo persisted.

June 5, patient arose occasionally, but could not walk without staggering. Had to lie down every few minutes. This condition continued about a week.

June 15, patient noticed impaired hearing in the left ear when using the telephone and "ear felt peculiarly."

June 22, visited a specialist, who told her it was a "catarrhal deafness" and did an inflation of the ear without benefit.

June 23, patient visited the writer and the hearing tests showed a complete deafness of the left ear and a normal right ear. Both ear drums were normal in appearance, position and mobility. Both Eustachian tubes were patent. Started Tab. Strych. Sulp. gr. 1/50 t. i. d.

June 30, no improvement. Vertigo continues to a much lesser degree. Strych. Sulph. increased to gr. 1/30 t. i. d.

July 5, no improvement. Vertigo still present.

July 17, admitted to Southern Pacific Hospital. Began injections of 2 per cent pilocarpine hydrochloride solution, M5. Good reaction.

July 19, repeated injection M5. Good reaction. Blood pressure 130.

July 21, injection MM6. Good reaction. Wassermann negative.

July 24, injection M8. Good reaction. Urine negative.

July 26, injection M9. Good reaction. Catamenia present.

July 31, injection M9. Poor reaction.

Aug. 2, injection M10. Very good reaction.

Aug. 4, injection M10. Good reaction.

Aug. 5, no improvement in left ear. Patient discharged from hospital.

Sept. 7, hearing tests show no change in affected ear.

Oct. 23, examination shows complete unilateral deafness still present. Vertigo in attacks but to a minimum degree, being most noticeable when turning to the right. Turning tests show marked horizontal rotatoric nystagmus and vertigo to the left after turning ten times to the right, duration 16 seconds. Turning to the left ten times produced a mild horizontal, rotatoric nystagmus to the right lasting 28 seconds, patient experiencing only slight vertigo.

310 Physicians Bldg.

PNEUMOCOCCIC MENINGITIS FOLLOWING ACUTE SUPPURATIVE OTITIS MEDIA.

Dr. J. Clothier, Pocatello, Idaho.

The following case is interesting because of the rapid development of a fatal meningitis in a patient suffering with acute suppurative otitis media who at no time during the course of the disease presented any signs of mastoid involvement.

J. B. E., male, age 21, came to my office on May 28, complaining of severe pain in the right ear. He had first experienced slight pain in this ear several days before after swimming, but it had been severe only during the last twenty-four hours.

Examination of the right ear showed intense congestion of the tympanic membrane, with slight bulging. There was no swelling or tenderness over the mastoid or in fact any symptoms indicative of mastoid involvement at any time during the progress of the disease. Temperature 99° ; general condition good.

Incision in tympanic membrane was advised but the patient refused. Hot bichlorid irrigations to be followed by the instillation of 12½ per cent phenol in glycerin were ordered. The following morning the ear felt considerably better, but he was again counselled to have an incision made, but he steadfastly refused. On the following morning, the pain having increased in intensity during the night, he consented to the operation and a free incision was made in the membrane under nitrous oxid anesthesia. There was an immediate discharge of thick, creamy pus with marked alleviation of pain. The hot irrigations were kept up and the next day the patient felt fine, the ear discharging copiously. Upon the morning of June 1, or nearly forty-eight hours after operation I was summoned to the patient's residence. His sister, a trained nurse, reported that he had slept well part of the night, but that for the past four hours he had been very restless and had complained of severe headache. I found him tossing about in bed, at times talking irrationally and complaining of excruciating pain over the entire head. The ear was still discharging freely. The restlessness and twitching of the muscles increased and he became delirious within an hour. No tenderness or swelling over the mastoid was present. Immediate operation was advised and the patient was removed to the hospital where restraining straps were necessary to keep him in bed. Divergent strabismus and inequality of the pupils developed the muscles of back stiffened and the head became retracted. Ophtalmoscopic examination was negative.

Spinal puncture was made to relieve pressure and for the purpose of microscopic examination of the cerebro-spinal fluid, but only a few drops were obtained, the intense swelling of the meninges having probably obliterated the communication with the spinal canal. Bacteriologic examination of the spinal fluid showed a pure pneumococcic infection. The pneumococci also predominated in the aural secretion. A near relative objecting at this time to operation until a surgeon from a distant city could be summoned for consultation, the operation was deferred. The patient gradually passed into a comatose condition and died before the arrival of the consultant.

Kane Building.

Gritting the Teeth as a Sign of Adenoids. C. E. BENJAMINS. *Nederl. Tijdschr. v. Geneesk.*, Feb. 17, 1917.

Benjamins states that in his experience with 250 cases of adenoids in India and 526 at Utrecht, as also in the experiences of others, comprising a total of 1,544 adenoid cases, a tendency to grit the teeth was manifest in from 25 to over 40 per cent, an average of 34.1 per cent. In his own experience the average was 37.2 and 34.6 per cent. In his 776 cases there was snoring in over 60 per cent; enuresis in 29 per cent; aprosexia in 34.6 per cent, and disturbances in hearing in 42.7 per cent. In 153 operative cases of adenoids, the gritting of the teeth stopped after the removal of the adenoids, and in fourteen it became much less, but it persisted unmodified in fourteen. Examination of 1,654 schoolchildren showed gritting of the teeth in 13.6 per cent. Benjamins is confident that the majority of the teeth gritters will be found to have adenoids. In a series of 115 teeth gritters examined for affections other than adenoids, all but two were found to have adenoids. In 10 of the children the teeth gritting was the only anomaly to attract attention, but a large adenoid was discovered in four.

ED.

A DEVICE OR ARTIFICIAL EAR DRUM FOR USE IN IMPAIRED HEARING AND FOR THE PREVENTION OF CONCUSSION DEAFNESS.

Dr. Edward Baum, Philadelphia, Pa.

This is an artificial device designated to be used in cases of defective and impaired hearing. It is adapted to insertion into the external auditory canal in such a manner as to be brought in a smooth and correct coaptation with the membrana tympani without causing irritation or pain. It provides an artificial ear drum, suspended perpendicularily concaved, and retained in this position by four roll-like folds in continuity with multiple cornucopial or cone-shaped sound accumulators, in which the outer or distal expanded openings are largest, gradually diminishing their lumen toward their approximal ends with smaller openings into an expanded or ampulla-like cavity in front of the artificial drum. The continuation of the outer folds of the accumulators expands outwardly with another roll-like fold continuous with the perpendicular circular surface diaphragm or artificial drums, approximating the natural drum or membrana tympani. The outer roll-like surfaces of the megaphone appendages afford a cushion-like contact with the canal walls, conforming with and permitting an easy and flexible support to the perpendicular surface diaphragm or artificial drum. The formation of these roll-like appendages is such as to afford ample intervening space for ventilation and drainage, and for sustaining the membrana tympani while the artificial drum holds it in position.

The material used, which has been found to be of the best advantage, is the finer grade of oiled silk prepared by Wright Brothers of Philadelphia, and below is illustrated and shown the different steps and forms necessary to arrange the finished form which in practice will give satisfactory results.

Figure A designates a blank cut from oiled silk which is smooth, elastic, pliable and flexible. The outer edge forms a plurality of rounded surfaces (2), which in the form are four in number. The body portion is provided with radial slits or cuts (3, 4, 5, 6), which communicate with the circular cuts (7, 8, 9, 10), respectively. The circular cuts are, preferably, substantially one eighth of the circle. The blank is then folded into position seen in Figures 2 and 3, and the juxtaposed edges are cemented as indicated at 11. This forms at one end a flexible disk at 12 (Figure 4). In the form illustrated these are four in number. These appendages are in continuity with the disk and are sustained by the four pillar-like supports (14) (see figures 3 and 4) and four openings (15, Figure 4) are provided in proximity to the disk (12). Figure 6 designates the inserter, which is provided with four slits (17) at its forward end, which are adapted to engage the pillar supports (14, Figures 2 and 3) in order to insert the artificial drum in place.

Impaired or defective hearing or deafness may be attributed to many and various causes. It is not the writer's purpose to consider cases of mutism, auditory nerve paralysis or congenital anatomic defects and malformations. Fortunately these are few, compared to those we term catarrhal, and a consequence or sequence to causes occurring in the upper air-passages. Reference is here made to the results of mechanical treatment to which the middle ear and tympanic membrane are subjected when catheterization with inflation or politzerization is a necessary part of the treatment to relieve the vacuum and correct the existing catarrhal condition. There is no question that the treatment usually instituted proves successful in this particular.

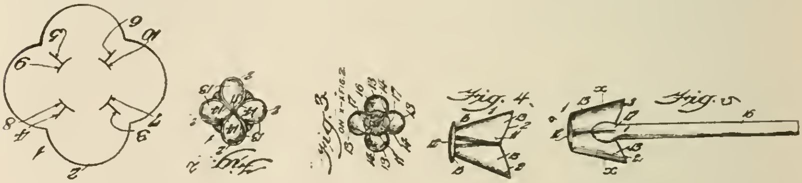

Fig. A.

Reference is especially made to the harm that the indiscriminate and abusive use of politzerization in conjunction with the Eustachian catheter may do, even in the hands of the most cautious experts. This will be observed when it is attempted to forcibly empty the contents contained in an 8-ounce Politzer bag into the middle ear (the capacity of which is possibly 10 to 15 minims), even filling the cavities of the nostrils, or when compressed air at a pressure ranging from 8 to 20 pounds is used. When the anatomic structure is remembered (that the membrana tympani is the point of least resistance, and is the only part that will yield or give way to this superfluous air pressure) rupture has occurred, and has been found responsible for conditions hereinafter depicted.

Under air-pressure force the membrana tympani is converted into an internal concave or external convex surface, instead of an external concave, or plainly, a bulging outward in comformity to various degrees. If thickening of the tympanic membrane is marked it resembles a good-sized pearl. Accompanying this occurs the distortion of the chain of bones (ossicles), throwing them out of alignment, suspending them and stretching them in a straight line from fenestra ovalis to the membrana tympani, a repetition of which will tend to chronically disturb their equilibrium; a sequence as is shown hereafter.

Figure 1 illustrates in this instance, for comparative methods, a normal ear showing the cup-in shape of the drum and the proper angle and alignment of the ossicles. This cup-in shape is adapted to the accumulation and concentration of sound. The angle at which the ossicles are suspended allows vibration to be transmitted to the inner drum or fenestra ovalis.

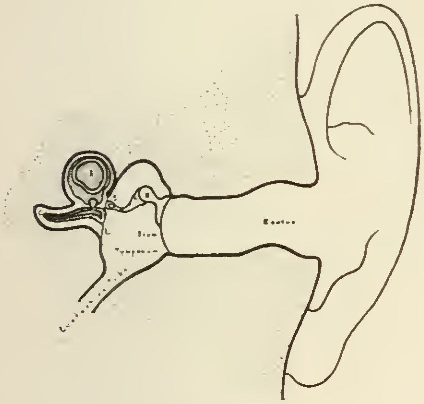

Fig. 1.

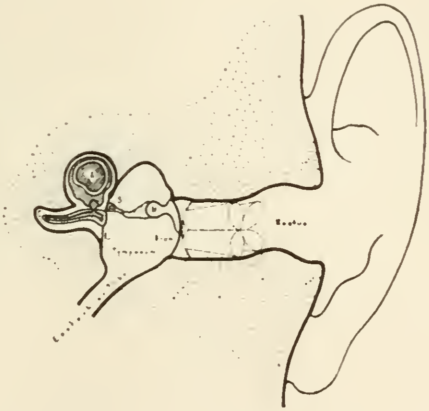

Fig. 2.

Figure 2 shows, in contrast to Figure 1, the distended drum—the effects of chronic insufflation, politzerization, or too forcibly blowing the nose, forcing the air into the middle-ear cavity, distending the drum and throwing the little bones out of alignment, and causing a locking of them also. The air which has been inflated and absorbed has created a new vacuum, but the locking of the bones prevents the vacuum from drawing the drum inward into its exaggerated concave condition, as is frequently found in the ordinary occlusion of the Eustachian tubes, where a vacuum has been created in the middle ear, and insufflation has not been carried on.

In this new vacuum, which has been created by the absorption of the air, the pressure is directly along the stretched ossicles, inward and toward the inner drum or fenestra ovalis. It is in this condition that the tinnitus aurium is most distressing at times, more so than where the vacuum existed with the drum drawn in.

Where the drum has been chronically distended, as is shown in the Figure and a vacuum exists, inflation that would relieve an existing vacuum under other conditions, like the drum being cupped inward, exaggerates it by distending the outer drum further, drawing on the ossicles and putting a greater strain outward upon the inner drum, as illustrated in the figure above. Where the bones are not locked and the increasing vacuum draws the drum inward and brings the bones to an angle, bringing with it the drum and cupping it inward, the vacuum increasing the pressure is then made against the inner drum also.

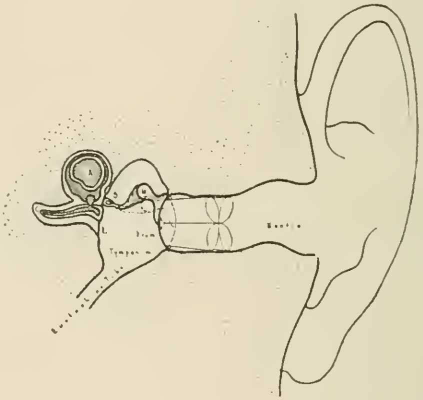

Fig. 3.

In this condition insufflation by inflating the middle ear will force the drum out and bring the bones back into line again.

The return of the vacuum will draw the drum back again. Frequent inflation will cause the drum to become flabby and the vaccum increases internally and draws the drum back again. Inasmuch as the vacuum has to be relieved, however, the tension is one way or the other. Where the drum is forcibly distended, it draws upon the inner drum. Where the drum is cupped inward in its normal state, and the vacuum exists, it pushes upon the inner drum. There also exists in this condition an increased amount of fibrous tissue in the drum, causing a thickening. This thickening varies in degree of severity, and in the exaggerated form, the outer rotundity of the drum resembles a pearl in shape and in color. Transparency of the drum suffers to the extent of the thickening and at the expense of the hearing.

The drum being distended or cupped outward, sounds are disseminated, while in its natural cup-in shape, it collects or accumulates sound. There is confusion on the part of the individual who can hear sounds, but has trouble in distinguishing what they are or from whence they come.

The ear device is intended to forstall and prevent mechanical disturbance in cases where repeated and forcible inflation is a necessary part of the treatment, and acts as a cushion-like buffer. The resilient properties of the oiled silk neutralize the shock of the opposing force. The conforming concave artificial drum recoils, reinforces, retains and sustains the membrana tympani. Where vibratory nebulization with rapid interrupted inflation is instituted the resilient recoil of the artficial drum proves an efficient adjunct in internal middle-ear massage.

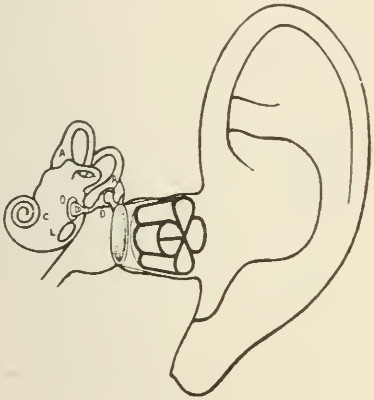

Fig. 4.

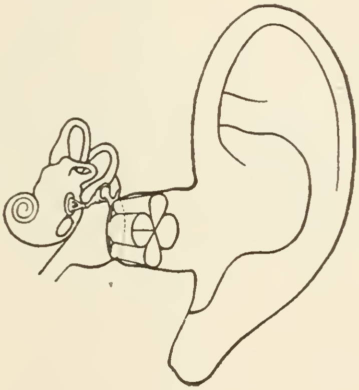

Fig. 5.

Figure 3 illustrates the correction. This is brought about by the presence in the ear of the phones. The cup-in shape of the artificial, drums against the natural drum, raises the little bones in turn and re-establishes the cup-in shape of the natural drum. The dotted line illustrates the distorted condition shown in figure 2.

Retaining the device in position acts as a delicate splint, enabling the membrana tympani, ossicles and ligaments to regain their tonicity.

Further inflation can be instituted with impunity, while the device prevents reoccurence of overdistention by the convex surface of the artificial drum conforming with and retaining the concaved surface of the membrana tympani. Favorable results have been obtained in cases of what is here termed bulging or distended membrana tympani, the result of too forcible inflation or too frequent politzerization. We may also include cases of too forcibly blowing the nose, attended distortion of the ossicles, attended with tinnitus aurium, confusion of sounds and the inability to understand them. From the description of the device it will be observed that it is applicable in these cases by a simple insertion coaptating the artificial drum with the membrana tympani. It is instrumental in readjusting the distended drum into its normal concavity, realigning the ossicles, thereby relieving strain, lessening tension and tinnitus. Improved hearing readily follows.

Among the many causes of deafness and difficulty in hearing are loud noises from hammering upon metals, shipbuilding, boilermaking and riveting on steel structures and buildings, concussions, explosions and reports of large guns at training grounds, aboard ship or land. Any condition where terrific vibrations reach the membrana tympani and throw it into a state of contraction, not only violent, but of continued or long duration, as in factories of all description where there is a great deal of machinery noise and vibration from the clatter of machinery may cause deafness.

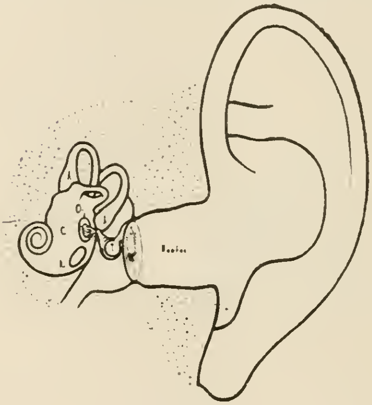

Fig. 6.

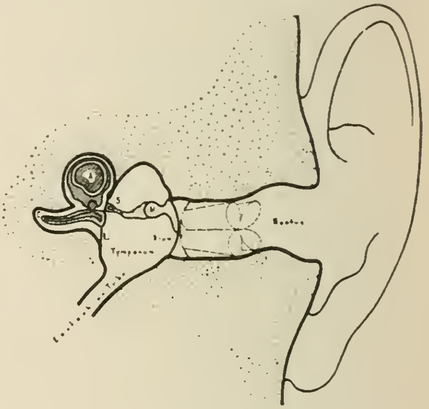

Fig. 7.

These terrific vibrations bring about a chronic thickening of the membrane tympani with distention from insufflation in the effort to overcome the existing vacuum. There may also be present catarrhal condition involving the Eustachian tubes with swelling and occlusion, creating a vacuum, and congestion of the middle ear, attended with stiffening and fixation of the joints of the ossicles.

A peculiar condition which may also be the paramount symptom here, is that the individual can hear better in those loud noises than in quiet places. Tinnitus aurium is distressingly present during this time. Bone conduction is also marked very acutely at the expense of what is here termed "air conduction." This device is splendidly applicable in preventing deafness from these causes, arresting its progress and relieving or correcting it after it has developed.

In order to prevent boilermarkers' deafness or its like, it is only necessary to insert the instrument into the canal, not quite adjacent or coaptating the artificial drum with the natural drum. This affords a little air space or air cushion between the two drums (see Figure 4) and all the vibrations, noises, reverberations, and irritation will be received upon the artificial drum. The air cushion, so-called, prevents the vibrations from reaching the natural drum or membrana tympani. It is worn as long as the patient is subjected to loud noises. On leaving this atmosphere the instrument is simply pushed back or the artificial drum coaptated with the natural drum as in Figure 5.

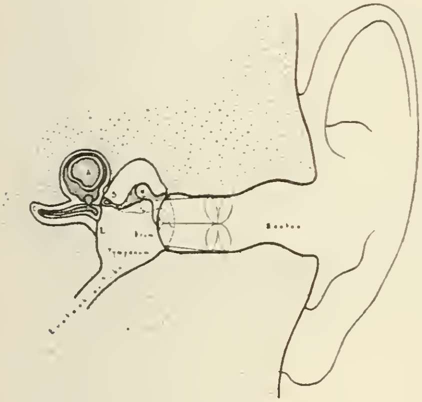
Fig. 8.

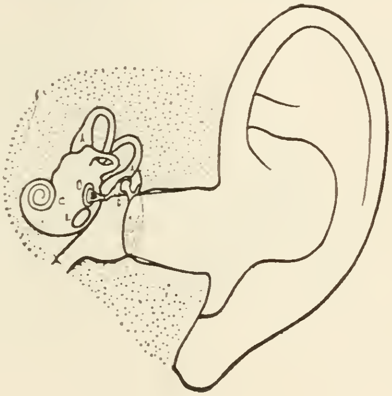
Fig. 9.

It is worn until the patient returns to the noisy atmosphere, when the device is again slightly withdrawn, affording the air cushion shown in figure 4. This will prevent the progress of the deafness and will protect the drum from further involvement or arrest the cause. It also applies when the deafness has progressed in the foregoing manner. While the device is worn in coaptation with the natural drum the alterative action is brought about and progresses in this manner:

The presence of the device in the canal, adjacent to the membrana tympani provides a stimulus, increasing the circulation thereto, attended with body heat. This local heat upon the device is reflected upon the parts as an unnatural heat, causing sweating, softening, exfoliation and thinning of the membrana tympani. The resilient concave gentle pressure of the artificial drum tends to conform the distended convex membrana tympani, retaining it and sustaining it into a more normal concavity, releasing the strain upon the ossicles and relieving the existing tinnitus, with increased secretions of the lubricant (cerumen). The production of this cerumen is stimulated by the device remaining in the canal. Improved function is noted in from six weeks to two months.

The absolute removal or changing of the phones becomes necessary only when the accumulated secretions are of such an amount as to cause annoyance or prevent sound from entering the little dilated megaphonic entrance into the ampullae and in turn upon the artificial drum. When fresh devices are inserted, further and gradual improvement follows. The persistent and continued wearing of the device for a term of two years terminates gratifying results, at which time the individual may continue to wear them as a preventive and a protection to the ear. The use of this device by those who are subjecting themselves to loud noises, will also prevent deafness or failure of hearing. Inasmuch as there may not be any deafness present, the device may be worn directly against the natural drum.

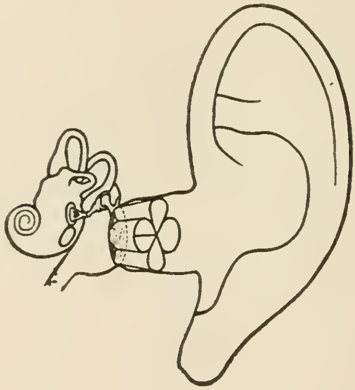

Fig. 10

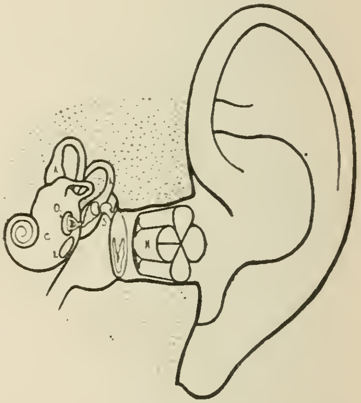

Fig. 11.

It is advised and recommended for the use of artillerymen or gunners of the Army and Navy, or in training grounds where guns are being tested. It is a preventative of rupture, puncture or destruction of the membrana tympani, and where such destruction has been done, even to the complete destruction of the membrana tympani and ossicles, leaving the middle ear exposed, resulting in discharge and impaired hearing, it has proven very beneficial, adding comfort and increasing the hearing of the individual.

In sclerosis with adhesive inflammation of the middle ear with ankylosis, thickening and distention of the membrana tympani, an hypothesis is advanced, assuming that the alterative action could be brought about in the middle ear and canal by the application of the device based upon its size, shape, applicability and the effect of the impermeable material (oiled silk) of setting up a stimulation and maintaining a resolution.

Figure 6 illustrates an infrequent and stubborn condition, very difficult to overcome. Inasmuch as the clinical histories of these cases are analogous to those conditions described in Figures 2 and 3, the cause is attributed to catarrh. Treatment which had been instituted included inflation to overcome the vacuum. This distended the membrana tympani, but when the vacuum reoccurred, instead of the ossicles readjusting themselves to the proper superior angle, there occurred a lateral twisting or rotation of the malleolus-incus articulation with an inferior angle below the meridian line, the opposite of the natural angle of the ossicles. A speculum examination with reflected light revealed a very prominent projection of the lower segment of the malleolous, appearing as if it would protrude through the membrana tympani. Following upward to the articulation with the incus revealed it resting against the inner surface of the membrana tympani, resulting in a condition which I have designated: "The duck-wing displacement of the ossicles." The contour of the membrana tympani in this condition is always found to be exaggeratedly concave (as depicted

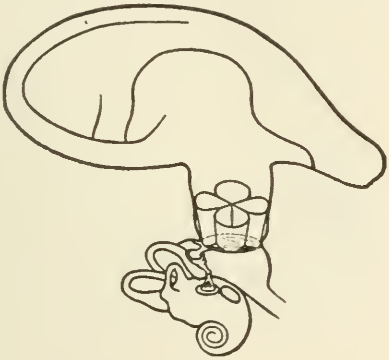

Fig. 12.

in Figure 6), retracting the membrane forcibly and plainly revealing the outline of the ossicles. I discovered this condition during my clinical research and found that it occurred in about 10 per cent of the cases. The application of my device enabled me to overcome the mechanical displacement which was so plainly outlined.

In order that correction may be brought about, two steps are required. In the first place, this is a condition where forcible insufflation is necessary to bring about the distention of the drum, and with it, bring the ossicles into a line, or up to the meridian line as illustrated in Figure 7. Second, while this increased amount of pressure remains in the tympanum, the device is promptly inserted into the canal, bringing the two convex surfaces of the artificial drum in coaptation with the distended natural drum. The resilent properties of the artificial drum, by making gentle pressure in an upward and inward direction, re-establish the concave condition of the natural drum, bringing with it the upward or superior angle, replacing the ossicles in their natural position as shown in Figure 8:

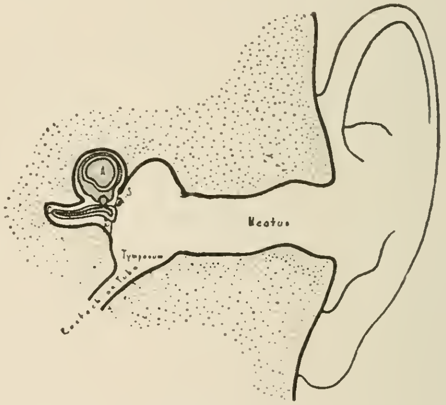

Fig. 13.

The artificial drum, suspended in a penumatic way in the canal with just sufficient pressure to hold the device in position, retains the membrana tympani in its corrected position. A comparison could well be made here to the previous condition wherein a simple distended drum, with the ossicles on a meridian line, was likewise corrected. To this exaggerated condition, brought about by further overdistention of the drum, straining the incus-malleolus articulation to the extent that the vacuum returned, caused a downward displacement. The maintenance of this corrected position, of the membrana tympani with the ossicles, is in the nature of a splint and enables nature to rehabilitate the ligamental structure of the articulation, restoring its function with an increased percentage of hearing.

The variety and degree of injury to the drum from abscesses or direct violence range from a pin point to a punctured, perforated or ruptured drum with serrated or irregular edges, varying in degree of destruction. Discharge usually accompanies these several conditions. The discharge may result from exposure or irritation from without, and will either drain out as mucus, or being retained in the middle ear undergoes a change and comes away in the nature of pus. Discharge may be the result of the sloughing of the ossicles or other destruction going on in the middle ear. Yet, discharge has been kept up from exposure of the delicate mucous membrane of the middle ear to cold drafts, winds, dust and other irritating properties. The same causes apply to the middle ear when it is exposed. Where the discharge comes from exposure alone, the condition is easily overcome by the use of the device.

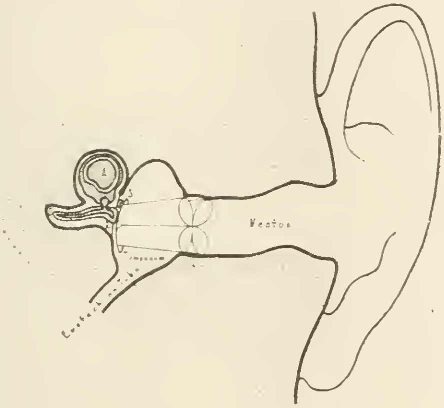

Fig. 14.

Figure 9 illustrates a ruptured drum with serrated edges exposing the middle ear to a more or less degree.

Figure 10 illustrates the correction with the device substituted for the perforated drum or membrana tympani.

Figure 11 illustrates an irregular perforation in the lower segment of the drum to the extent of removing its support, permitting a sagging downward of that part of the drum covering the malleolus and bringing about a disarticulation of the incus, the result of trauma.

Symptoms manifested resemble those accompanying antrium disturbance; dizziness and irregular gait, a slight inclination of the head toward the impaired ear, marked impairment of hearing, with lessened bone conduction (detected by tuning fork test) resembling nerve impairment.

Figure 12 illustrates an absolute correction: (1.) By a perfect substitution for the perforated drum. (2.) By coaptation of the convex surfaces of the artificial drum with the membrana tympani, thus re-establishing the concavity of the natural drum, causing in turn juxtaposition and re-articulation of the incus and malleolus, acting as a perfect splint and retaining them in position with favorable results. The disturbing symptoms were removed and the hearing improved.

A case of complete destruction of the membrana tympani, including the condition when the drum and ossicles have been entirely removed, leaving only the stump of the stapes, either from operation or sloughing, is ilustrated in Figure 13. This condition is usually accompanied by a discharge which originally comes from exposure of the middle ear, or too forcibly blowing the nose, which forces the mucus from the back part of the nose and the accumulations that have lodged in the Eustachian tubes, through the tubes into the middle ear. This accumulation, if allowed to remain, undergoes a change and drains from the ear as pus.

Figure 14 illustrates the complete substitution of the drum and bones, reaching from the remnant of the rim of membrana tympani, spanning the chasm across to the stump, still adherent to the fenestra ovalis, fulfilling every requirement and proving a perfect substitute as an artificial drum.

This substitution enables the patient to hear.

It also hermetically seals the middle ear, protecting it from further exposure, and allows nature to rehabilitate the lining of the middle ear, bringing about a restoration of the delicate mucous membrane and affording much comfort to the individual. Hearing improves from 40 to 80 per cent immediately upon the insertion of the instrument, further improvement resulting from the alterative action of the device.

CASE REPORTS

Case A. E. A. C., student, age 18 years, came under observation, May 29, 1917, with the history of scarlet fever when a child. It left him with discharging ears and impairment of hearing, which handicapped him much in his studies. He was about to enter the high school and felt the need of his hearing more acutely.

Examination: General condition good. Well developed. No symptom of any other unfavorable condition. Right eardrum perforated, showing destruction of the inferior half, laying bare the niche of the round window. The inner walls of the cavity were covered with a mucus, which was draining into the external canal. The left ear showed more destruction, revealing the handle of the malleus free. The round window in perfect view. Hearing, right ear, watch test, one inch. Left ear with even more of the drum destroyed, hearing was two inches and a fraction.

Treatment: Cleaning of the canals and swabbing of the cavity. Placing the artificial eardrums in position increased the hearing: right ear, six inches; left ear, eight inches. The patient returned once a week for four visits; then once in two weeks for four visits, when the artificial drums were removed, the cavity cleaned and fresh drums replaced. At the present time he is to return when he feels the necessity for a dressing, about an average of once a month.

He has no trouble in hearing. His teachers' conversation is heard and understood with ease.

Case B. M. J. Y., age 34. Clerk by occupation. First visit October 12, 1916.

History: Measles and diphtheria in childhood. Abscesses in both ears and also discharge from both ears. A dripping sensation from back part of the nose upon palate. Head noises of a ringing character. Treatment for catarrh and, as he expressed it, "all kinds of treatment for ears." General health good. Used tobacco (smoked) moderately.

Examination: Post-nasal catarrh; mucous membrane turgescent and boggy. Middle ear exposed; drum and ossicles absent. Hypersecretion of a watery nature from mucous lining of the middle ear. Hearing tested with watch: right ear, two inches; left ear, one inch.

Treatment consisted of usual cleaning and nebulization to clean out the Eustachian tubes. Middle ear cavity swabbed with alcohol; artificial drums applied. Test showed immediate improvement in hearing; equal distance from both ears, ten inches. Returned November 9, 1916. Secretion less in amount; marked improvement in hearing. Dressing and application of fresh drums. Living in a distant town, the patient was furnished with six pairs of drums, with instructions to take care of himself. Returned July 25, 1917, improved. Again on August 15, 1917. Last time, September 17, 1917; results favorable. The patient applies the drums himself and will return at intervals of three months.

Case C. T. G. O., age 42, merchant. First visit, July 12, 1917.

History: Temperate; active. General condition good. Had catarrh of the nose, head and throat, and treated by specialists with sprays of different kinds. Air was forced into his ears during treatment. He, too. had done so, and had made his ears crack when forcibly blowing his nose. Feeling of dryness in back part of nose and sensation of dripping into throat. Head noises of ringing, buzzing and hissing nature.

Examination: Nose, turbinates, nearly normal; mucous membrane slightly congested. Post-nasal palate and surface dry; lumpy mucus adherent to posterior wall of pharynx. Ear channels dry, scaly; no secretion of cerumen. Drums dry, thickened, convexed, distended. Handle of malleus prominent (Illustration No. 2). Ossicles displaced. Could hear watch tick in direct contact with right ear. In contact with left ear, distinctly.

Treatment: Alkaline sprays to post-nasal and palate surface, nebulized with oil base. Inserted artificial drums coaptating with natural drums. Hearing improved. Right ear, watch test, not quite in contact. Left ear, watch test, one inch away.

June 17, 1917, returned. Complained that some soreness had existed for first three days after insertion. This subsided. Felt benefited in his hearing. Also the full and bulging sensation of the ears relieved and was comfortable. Head noises have been getting less in right ear. In left ear noises had ceased entirely. Natural secretions much more in evidence. Hearing increased in right ear one-half; in left ear double, showing a gradual improvement as the correction is going on and the normal secretions are being established.

Case D. Rev. J. C. F., age 62, came under treatment August 14, 1917.

History elicited that his hearing had been gradually failing for years. Had been examined, diagnosed and treated for catarrhal conditions in his nose. Treatment had consisted of sprays and inhalations. Valsalva's method of inflation to blow air in his ears had been frequently applied to relieve the full feeling existing in his head. Experienced dryness in back part of nose with a sensation of dripping in the throat. Head noises at times of a buzzing nature. Catarrhal condition improved under treatment, but hearing gradually grew worse.

Examination: Canal dry and devoid of cerumen. Drums congested and distended (convexed) handle of malleus very prominent; ossicles distorted. Tinnitus. Hearing in both ears by watch test, nil. Bone conduction (tuning fork test) increased above normal (Rinne, negative).

Artificial drums inserted, coaptating with membrani tympani; watch test: hearing improved two inches in right ear, one and one-half inches left ear.

Returned August 27, 1917. Secretions in both ears appeared to be normal. Artificial drums retained in position. Progress satisfactory. Hearing increased gradually. Tinnitus absent. Instructed to wear artificial drums for three months, then to remove them, cleanse ears and replace them, and return when necessity required.

Case E. A. E. A., age 58.

History: Could not give any cause for increased and gradual deafness. Always took best care of himself. Hard worker. Smoked cigars perhaps to excess. Very active life. General health good. Noticed some dryness of nose, seemingly of dry catarrhal nature. Frequent colds, which cleared up under ordinary care and domestic remedies. Ears began to bother, first by itching in canal. Seemed to be dry. Noises of a ringing and buzzing character, annoying and confusing. Later had to concentrate more upon what was being addressed to him. Began to realize that hearing was becoming affected. Experienced a full feeling in the head in region of the ears. Discovered that blowing his nose forcily and forcing air into his ears would relieve head noises and improve his hearing temporarily. This became more frequent. Intervals of impaired hearing more marked.

The patient came under observation August 9, 1916.

Examination: Mucous membrane of nose dry, glazed and raw looking. Turbinates turgescent and boggy. Accumulations of mucus of a lumpy, sticky consistency clinging to vault of pharynx. Dry, leathery condition of palate. Auditory canal was dry and scaly. Absence of secretion. Drum, dry, distended, convex and thickened in the upper segment approaching the center of drum. Handle of malleus pointing acutely outward, giving the drum the rounded appearance of a large pearl, with the ossicles out of alignment. A more vivid description is presented under Figure 2.

Treatment consisted of alkaline sprays in the nose, with retro-sprays to the palate and pharynx, followed with nebulization of oils. Ear channels were mopped out with warm solution of bicarbonate of soda and dried thoroughly. Applications over the canal and drums of Russian oil. Artificial drums inserted and brought in contact with natural drum; very gentle pressure being made to sustain the natural drum and act as a buffer to prevent further stretching and distension, while nebulization was being instituted to medicate the Eustachian tubes and tympanic cavity to overcome the vacuum.

Results were very satisfactory and pleasing. Tension relieved, tinnitus reduced, hearing increased; perception more acute. Spraying and nebulization continued three days apart. Observed each time that the artificial drum was in coaptation with the natural drum. Subsequently, it was arranged that he return at such times when the effect of the treatment began to wane. Hence as he improved his visits were less and less frequent, until now they are at intervals of two months apart, and only to adjust the artificial drums, which he could well do, but prefers that I do it for him. The status of his condition to-day is satisfactory to him and gratifying to me; so much so, that four other cases similar to this have been sent to me by this grateful patient.

Case F. H. J. B., age 58 years, superintendent engineer, came to my office June 1, 1917.

History: Impaired hearing in both ears. Right ear more impaired than left. He stated that his men were compelled to shout to make him hear. His position was being threatened. Had had treatment at different times for impaired hearing in his right ear and for a discharging left ear.

Examination revealed right ear distended as described under Article 2, Illustrations Nos. 2 and 3. Left ear, complete destruction of drum and ossicles as described in Article 6, Illustration No. 14.

Hearing in right ear was practically nil, and he had not depended on it for some time. Left ear: could hear watch tick on contact.

Treatment: After proper cleansing of the left ear, the artificial drum was inserted and on testing the patient could hear watch tick four inches away.

The artificial drum was inserted in right ear, and he could hear conversation in an ordinary tone two feet away, with left ear entirely closed.

Patient has been visiting me at irregular intervals from three days to four weeks apart. Each time testing of his hearing showed progress towards a correction in his right ear, and improved hearing in both ears to such an extent that the remaining impairment of hearing is hardly noticeable.

Case G. W. E. S., age 40, a boilermaker, came under treatment June 12, 1917, with all the symptoms of boilermaker's deafness. Thickening and slight distension of both ear drums.

The insertion of the artificial drums improved his hearing fifty per cent and on his return home, as he afterward told me, upon entering the hall, heard the clock striking, something he had not heard for ten years. I might add that if the phones had been worn as a buffer, as explained in Article 2, Illustrations Nos. 4 and 5, deafness could have been averted.

Case 18. W. S. G., age 57, Disct. Manager, Life Insurance Company. First visit occurred April 15, 1917. He gave a history in detail of having been treated for catarrhal deafness by inflation, politzerization with catheter. General condition, good. Exemplary and temperate habits.

Examination of the ears revealed an inferior angular eversion of both drums. Hearing tested with watch: Right ear, one inch; left ear, one inch. On April 18, 1917, artificial drums were inserted immediately after forcible inflation, resulting in immediately improved hearing: right ear, four inches; left ear, five inches. Drums retained in position.

Returned August 2, 1917. Hearing in the right ear, fourteen inches; left ear, eight inches, after placing fresh drums.

Note the immediate results and the gradual improvement.

Case 20. C. S. E., age 38 years; salesman. History very similar to that of the preceding case. Called October 18, 1917.

Diagnosis: Inferior, angular eversion.

Tested hearing; watch test: right ear, four inches; left ear, four inches. Drums inserted after forcible inflation.

Results: Right ear, increased to twelve inches; left ear, increased to eight inches.

722-724 Perry Building.

DEPARTMENT OF MEDICO-MILITARY ACTIVITIES.

SECTION OF SURGERY OF THE HEAD.

The medical care of one million troops in the field will require the services of several thousand physicians. The Medical Corps of the Regular Army, one of the most carefully selected organizations of medical men, was not sufficient for the present emergency. Primarily, the corps was augmented numerically by the organization of the Medical Reserve Corps. By a careful distribution of the men of the regular corps, the influence of their long and thorough training permeated the new organization, forming a completed organization in which those inexperienced in military medicine were safely supported. The Medical Reserve Corps organized, the profession realized its responsibility and, in consequence, commissions were issued to a large number of physicians throughout the country.

Many of the members of the Medical Reserve Corps were detailed to various Medical Officers' Training Camps for the purpose of intensive technical and physical training. This assignment afforded the officers opportunity to obtain physical fitness and sufficient military experience to qualify them as regimental, ambulance and sanitary officers. It also permitted the weeding out of the physically unfit, but did not afford opportunity to classify officers according to their professional attainments. The details of this training so consumed the time of instructors and students that it was impossible to judge of the fitness of the officers for special work.

Recognizing the need for specialists, the Surgeon General, with the General Medical Board of the Council of National Defense, through the great medical bodies of the country, established in his office sections for the care of the various medical and surgical specialties. Physicians of high professional rank, many of them authorities in their chosen field, and in civil life acknowledged leaders, were selected to direct these sections. This plan of classifying the personnel of the military medical corps, a new departure, is another example of the far-sighted preparation now so conspicuous in every branch of the service.

The various needs of the service demanded the establishment of eight sections; namely, Internal Medicine, General Surgery, Orthopedic Surgery, Venereal, Skin and G. U. Surgery, Surgery of the Head, Laboratories and Infectious Diseases, Neurology, Psychiatry and Psychology and Roentgenology.

The Section of Surgery of the Head, made up of the sub-sections of Ophthalmology, Oto-Laryngology, Plastic and Oral, and Brain Surgery, developed from a similar organization of the General Medical Board of the Council of National Defense.

In the office of the Surgeon General, the section as a whole is under the direction of a Lieutenant-Colonel of the regular corps and to each sub-section is assigned a member of the Medical Reserve Corps. These officers act in an advisory capacity in the selection of personnel, etc., and outline the policies under which the work is to be carried on.

Those in charge of Ophthalmology and Oto-Laryngology found their chief function in acquainting the physicians of the country with the fact that the Surgeon General was desirous of using the specialist as far as possible in his specialty, and in listing the names of the physicians who came into the Medical Reserve Corps with a view to work in their specialty. They have aided the Surgeon General to select and assign the proper personnel to the Base Hospitals at the various Cantonments. At the present moment the selection of the personnel for the Base Hospitals, which are destined eventually for duty abroad, engages their attention.

The officers in charge of the sub-section of Plastic and Oral, and Brain Surgery were confronted with the fact of the great scarcity of surgeons familiar with the special technique so necessary in the successful management of injuries of the face and head. It was necessary to use this small group of qualified surgeons to instruct others, and thereby build up a corps of sufficient size to enable assignment of specially trained surgeons to the various hospitals. A conference of the recognized authorities held in Washington, developed the fact that the large universities were willing to assist in this professional training by tendering to the Surgeon General the facilities of their medical departments and hospitals.

Schools, with teaching staffs of surgeons versed in the details of special branches were established. The course of instruction includes anatomy, physiology, symptomatology, operative exercises on the cadaver and animals, splint making, clinical demonstrations and didactic lectures.

In the selection of students, the sub-section of Plastic and Oral Surgery first considered a group of surgeons commanding excellent technique, but lacking in the necessary special refinements. Secondly, the members of the dental profession, many having medical degrees, who have concentrated their studies upon peri-dental tissues, the jawbones, and structures of the mouth, and consequently familiar with the special details of the treatment. The correlation of the technique so as to enable the individual surgeons to command the combined knowledge can well be accomplished in these courses.

In a like manner the successful neurological surgeon must, in addition to his general surgical training, have some knowledge of neurology and be trained in the special technique of surgery of the nervous system. The imparting of this special training could best be accomplished by similar schools. With the assistance of the leading members of the profession throughout the country a list of candidates for these schools has been compiled. These candidates, in groups of twenty-five, are assigned to the schools for a period of intensive fundamental training. When this course is completed, it is planned to give the more competent surgeons an opportunity to continue studies in the various clinical centers of the country. Selected groups of these officers, well-grounded in the fundamentals, can later be more specially qualified through a course of clinical instruction at the front.

In this manner the important period of preparation so necessary for the accomplishment of rapid expansion of all branches of the service, will be most wisely used.

When the troops are engaged and many beds of the various hospitals are occupied by soldiers with injuries of the head, assignment of these surgeons who have had special training, to assume the responsibility of these cases should result in the utmost efficiency. In the unit for Plastic and Oral Surgery a general surgeon will have associated with him a dental oral surgeon, who, having gone through a course of intensive training, will be fitted to obtain the very best results through their correlated skill. Likewise, the officer of the sub-section of Brain Surgery, necessarily somewhat divorced from the competent neurologist, will have keen judgment and undertake with clearness his responsibility.

The fact is evident that it is not the intention of the Surgeon General to make special surgeons by means of a short course of instruction, but add the necessary special knowledge to the equipment of surgeons. This special knowledge will not interfere with the general usefulness of the surgeon in the performance of any duty which may fall upon him as a member of the military medical corps.

SCHOOL FOR MEDICAL OFFICERS ESTABLISHED IN ST. LOUIS.*

The Surgeon General and his advisors have, after mature consideration, decided to establish schools for the training of medical officers in certain of the specialties. In consideration of the fact that wounds of the head and neck are, because of the present mode of warfare, more than ordinarily frequent in this war, and also because the number of men who make such surgery a specialty in private practice is rather small, the surgery of the head and neck is the first of the specialties to be taught in these schools.

Major V. P. Blair, of St. Louis, who is one of the five men constituting the National Army Board in Head and Neck Surgery at Washington, has been instrumental in having one of these special training schools established in St. Louis, and one class has already been put through. It is called the Officers' School of Oral and Plastic Surgery.

Washington University very kindly furnishes, free of all cost, the use of her splendid laboratories. The faculty is drawn from the professors and instructors in Washington University and in St. Louis University.

We understand it is the intention of the Surgeon General to establish units composed of both medical and dental officers, who will care for all head injuries not involving the brain or cord; hence the officers attending this school are assigned from both medical and dental sections and receive instruction together in order that they may more intelligently work together later on.

Major V. P. Blair has general Supervision of the work for the Surgeon General. Professor R. J. Terry, Chief of the Department of Anatomy at Washington University, is Dean of the new school, and Professor H. W. Loeb, Dean of the Medical School at St. Louis University, is in charge of the curriculum.

Each "course" covers a period of three weeks. A class consists of about forty men equally drawn from medicine and dentistry. The kind of medical man most desired is the general surgeon who has shown some special aptitude or preference for the kind of work, although those who have been engaged in the head specialties are accepted, while among the dentists those showing a fondness for oral surgery and prosthetic dentistry, are more desirable.

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* Contributed by Dr. W. T. Coughlin at the request of Major V. P. Blair.

Below is a synopsis of the course just finished:

ANATOMY.

a. Dissection (Surgeons). 40 hours. R. J. Terry.

b. Demonstrations (Dentists). 12 hours. D. M. Schoemaker.

c. Surgical Anatomy. 3 hours. P. Y. Tupper.

INFECTIOUS PROCESSES ABOUT THE MOUTH, FACE AND NECK.

a. Peridental Infection. 2 hours. Virgil Loeb.

b. Infections of Soft Tissues and Bones. 2 hours. Ernest Sachs.

c. Infections of the Maxillary Antrum. 1 hour. H. W. Loeb.

d. Bacteriology of the Mouth. 4 hours. E. P. Brady.

e. Salivary Infections and Fistula. 1 hour. Carroll Smith.

WOUNDS AND OTHER INJURIES.

2 hours. J. Rilus Eastman and Ernest Sachs.

FRACTURES.

Diagnosis and Treatment of Recent and Old Fractures. 4 hours. Captain H. Ivy.

SPLINTS; MAKING AND APPLICATION OF SPECIAL FORMS.

a. Dentists, 30 hours. W. F. Neuhoff.

b. Surgeons. 4 hours, in groups. J. H. Kennerly, B. Lischer, F. C. Rodgers, Virgil Loeb, Walter M. Bartlett, H. C. Pollock.

OPERATIVE COURSE.

a. Plastic Methods on the Cadaver. Lectures, 5 hours; laboratory, 15 hours. W. T. Coughlin, Meyer Wiener.

b. Blood Transfusion and Bone Grafting. Lecture, 1 hour; laboratory, 6 hours. Barney Brooks.

ANESTHESIA.

2 hours. Ellis Fischel. 2 hours. E. H. Keys.

POST-OPERATIVE CARE.

a. Ward Work. 3 hours. A. O. Fisher and O. R. Sevin.

b. Mechanico-Therapeusis. 1 hour. F. W. Ewerhardt.

ROENTGENOLOGY.

2 hours. Captain H. Ivy, Sherwood Moore.

CLINICAL DEMONSTRATIONS.

12 hours. W. T. Coughlin, A. O. Fisher, Ellis Fischel, John Kennerly, Virgil Loeb, Ernest Sachs.

EXTRACTION OF TEETH.

4 hours. G. B. Winter.

P. S.—Since writing the above, we learn that the course is to be lengthened to five weeks and instruction is to be given in the surgery of the brain.

Dr. John F. Culp, Harrisburg, Pa., has been commissioned a major in the Army Medical Corps.

Dr. R. H. Ells, Ottawa, Canada, is in France.

Dr. A. D. McConachie, Baltimore, has been commissioned a captain in the Army Medical Corps and has been assigned to active duty at Plattsburg Barracks, N. Y.

Dr. J. W. Caldwell, Nashville, Tenn., has been ordered to Fort Oglethorpe, Ga.

Dr. Duncan MacPherson has received a commission in the Army Medical Corps.

Major A. C. Magruder, Colorado Springs, is at Fort Sill, Oklahoma.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

(Continued from page 788.)

DISCUSSION.

DR. JAMES E. LOGAN, Kansas City: There is no question in my mind but that sinusitis results in atrophy—that is, the cases are usually preexisting sinusitis cases.

DR. ROBERT C. MYLES, New York City: I have never been able to find anyone who had seen a case which occurred after puberty—that is, anyone in authority. It is essentially a disease of child life. How much of it is retarded development and how much atrophic is another question. The most serious question is, how should we operate on the sinuses of these children; what is the best procedure? That can be developed in the future, I think. In regard to patients who are older, it has been my experience that at any age I get my most brilliant results, with regard to odor and continuance of discharge by opening the antrum.

DR. J. M. INGERSOLL, Cleveland: I simply wish to ask Dr. Coffin whether these patients were operated upon endonasally or through the canine fossa, and what results were obtained?

It seems to me that we should not consider here the question of atrophic rhinitis. If this is to be a discussion on the origin of atrophic rhinitis, may I ask how it is that the orbital fissure from the anterior half atrophies also in the process? There is no sinus opening into that district.

DR. HENRY L. SWAIN, New Haven: Dr. Coffin has come to us with the most astounding assertions. I understand he has come with the proposition stating that he thinks he has further evidence of the origin of atrophic rhinitis in children. Then he comes forward with the statement that he thinks he can cure odor by opening up the antrum, and in his remarks he presupposes that these diseased antra began in childhood, produces atrophic rhinitis, and continues through years of life. Then he states he cures atrophic rhinitis of at least the odor by opening up the antra. I think those are rather bald statements and would like to hear them commented upon. Personally, I have examined his statements and believe he is right.

DR. J. L. GOODALE, Boston: Dr. Coffin will have an opportunity for further elaboration of that point. It is in order for any member to ask questions regarding further information from Dr. Coffin.

DR. HANAU W. LOEB, St. Louis: This so-called purulent rhinitis which was described so well twenty-five years ago or so is exceedingly common, and from the fact that the nasal mucosa is affected, it is easy to understand that any of the sinuses more directly connected with the nose in childhood than in adult life should be similarly affected. If the mucosa of the antra is thickened in an existing case of suppurative rhinitis, it is very natural that it should show on the screen. That explains, to my mind, the reason that in so many of these cases Dr. Coffin was able to find evidence of obscuration of the antral fistula. However, this is an exceedingly common condition, and as atrophic rhinitis is fairly uncommon, he should explain why it is that so many get well without the production of atrophic rhinitis.

Dr. Burt R. Shurly, Detroit: I should like to ask Dr. Coffin how extensive is the operative procedure following this particular line of invasion.

Dr. Norval Pierce, Chicago: I am sure that some of these pictures are misleading. Last winter I had two cases—children ranging from four to six years—where the roentgenologic picture, according to the readings of the roentgenologist and myself, showed anterior disease—in one case bilateral, and in the other case lateral. I washed out three of these antra (in one case I washed it twice), and nothing whatever was washed out. They were quite dry antra. There is no doubt but what they were dry. In the past I have had a similar experience to that, where the discharge from the nose led me to have an ex-ray taken, and where the roentgenologist said that the sinuses were undoubtedly diseased, but which were found healthy. So that we must check up these cases of supposed disease of the sinuses by other means than the x-ray.

Dr. Robert C. Lynch, New Orleans: Down South we see a number of cases of atrophic rhinitis, and I have two children of the same family, twins, two and a half years old, perfectly well developed cases of atrophic rhinitis. I wonder whether they have lived long enough to go through the period of inflammatory changes to give them atrophy. I do not think they are due to simple sinus disease.

Dr. J. M. Inglrsoll, Cleveland (closing the discussion): We get new ideas in regard to the anatomic relations from the stereoscopic pictures, because we get the three dimensions. In regard to the use of stereoscopic radiographs, I think that unless a man uses them long enough to become familiar with them, and develops some skill in interpreting them, they are liable to stop using the method. If they do study them and check up the findings, I am sure they will become convinced of their value.

Dr. Loeb spoke of the value of reversing the plate. One of the great advantages of the stereoscopic plate is that you can look at it from both sides—that is, you see the structures in the operative field, and also from the inside, which you cannot see in any other way.

Shadows over the accessory cavities in the x-ray, whether stereoscopic or other plates, make one suspicious of involvement of the sinuses of the nose. I regard them simply as one of the confirmatory evidences. They are not positive. There are other things which enter into the causation of the shadows. A sinus which has thickened mucous membrane casts a darker shadow than one with a normal mucous membrane. The variations of the bone structures themselves, or part of the other bones beyond coming into the field, make one sinus appear darker than another. The bones do vary, so that a dark sinus alone, as seen in the plate, should make one only suspicious of that cavity.

Dr. Lewis A. Coffin, New York City (closing the discussion): Every case of atrophic rhinitis generally brings out something like adenoids and tonsils. Inasmuch as this is so, and that Dr. Loeb stated that it is not a very common or rare disease, I will convince him at least that it is as common as this. If you go in the hospital ward you will find almost all the children show disease of this kind. This does not mean that if you will take them off the street they will show the same percentage. They are simply diseased children.

I had a little patient in the same ward four or five years ago, and she is now ten or eleven years old. She had a keratitis, and had been in the hospital a year. We took out one tooth, both the milk tooth and the one above it, and cleaned up the antrum, and inside of a short time her eyes were open and they have been open ever since. I saw the child and examined her jaw, and one would not know she had even lost a tooth unless you counted the teeth on the two sides.

Somebody asked the question as to whether these all went on to atrophic rhinitis. I presume not. Some get well; but all the cases shown here are chronic cases.

There are changes in the lining membranes of sinuses that the microscope and pathologists cannot tell us. There are latent sinusitis cases in which the x-ray does not show much. I have operated upon a case and found no free pus and no pockets of pus, but every bit of tissue taken away the pathologists will tell you is just covered with disease. I think it is possible to get some of our worst conditions from latent sinusitis cases. The antrum frequently shows dark under the x-ray; you cannot even get water through, and yet there is no pus. I do not know what the degeneration of that membrane is, but it is full of polyps.

In regard to opening up the antrum and getting rid of the odor, because it is just as easy to do this in atrophic cases, go home and try it.

We had one case in which the odor was as bad as you can think of, and the patient had never been treated for ozena, and nothing had been done but the antrum opened. In some of the cases we purposely left the ethmoids to pustulate and scab, in order to see the scabs without the odor, but the antrum is clear.

The Intranasal Drainage of the Frontal Sinus. By E. FLETCHER INGALS, M. D., Chicago.

The writer believes that in a large majority of cases of chronic frontal sinus disease, free drainage is all that is necessary, and that vigorous curettage is a bad practice, although gentle removal of polypi or granulation tissue with a curette, if present, would undoubtedly hasten the cure.

The furor for extensive mutilating operation on the frontal sinus has had its day, and now, more conservative intranasal drainage is a practice that is generally accepted.

The writer's attention was first called to the benefit obtained from intranasal treatment in 1893, when he succeeded in curing two cases by intranasal treatment, as neither of them would consent to an external operation.

As drainage into the nose was a prerequisite for treatment, the writer devised a burr with a safety guide to be run into the nasofrontal duct so that the duct could be enlarged permanently.

This burr made a canal six millimeters in diameter, which, however, had a tendency to contract. To prevent this latter, a metal tube was inserted into the canal. This metal tube was superseded by the spring-gold self-retaining tube now in use. This may be worn for a number of years and permits free irrigation by the patient.

The writer is convinced that the operation can readily be performed by any properly equipped laryngologist, and has placed the percentage of recovery of suitable cases as high as ninety-five per cent.

The instruments used are described, as also a detailed account of the manner of operating that the speaker has devised.

Further Report on the Intranasal Treatment of Accessory Sinus Diseases.

By Robert Cunningham Myles, M. D., New York.

In the past twenty-four years the writer has had much to say concerning the intranasal treatment of accessory sinus diseases. On the fourth Wednesday in January, 1893, twenty-four years ago, he read a paper entitled, "The Diagnosis of the Diseases of the Accessory Sinuses and Their Treatment."

On account of the failure to secure uniformly good results, in antral suppuration, he made use of the malar ridge and canine fossa route; and then, after due consideration had been given to the cases, with more or less unsatisfactory results, it was noted that very favorable conditions nearly always followed when the window through the inferior nasomeatal wall was not less than fifteen millimeters in diameter, and never contracted to less than about ten millimeters.

The writer continues to prefer the nasal route to the antral one for operation on the sphenoidal cells, and strongly advocates making large openings in the anterior walls.

Partial success in an attempted submucous and subperiosteal operation on the anterior wall previous to removal of the bony wall, and the utilization of the membranes for covering the lower sections of severed bone, encourages the belief that if this procedure is well carried out it will aid materially in preventing the too frequent closure of the sphenoidal openings.

In the ethmoidal cases the classical operations of removal of the middle turbinal, the floors and the median walls of the cells are carried out.

The progress that has been made in the intranasal treatment of the frontal sinus diseases centers around the methods for making permanent large openings from the nose into the sinuses.

After removal of the anterior end of the middle turbinal and the anterior ethmoidal cells, the writer uses improved designs of his outward cutting chisels for removing as much as is possible of that part of the floor of the sinus which is formed by the nasal process of the superior maxillary bone. These instruments are used with a feeling of safety, as they automatically protect the dangerous areas in this region. Several of the most useful models are presented with this paper for your inspection.

DISCUSSION.

Dr. Emil Mayer, New York City: I would like to make an apology for the abstract editor, and would like to say that what Dr. Ingals complains of was not any garbling of any original paper, but a misstatement on the part of the stenographer of the discussion, which was very voluminous, on the symposium. The original statement of the stenographer as to Dr. Ingals' standpoint was quite in accord with what he says to-day. The trouble lay in an attempt, within one hundred and fifty words, to make a description of an operation which omitted some quite vital and important things. I will say this, that I question whether any laryngologist would take an abstracted report in any journal and would attempt to follow any method or description of any operation. He would surely go to the writer of the paper or to the Transactions of the Association, so as to get the correct report. However, all bad things, and this certainly was bad, as Dr. Ingals and I and the rest of you also will agree, have their good ends, and the good end lies in that we have again the pleasure of hearing from Dr. Ingals just how this intranasal operation is done, and how, after ten years, he finds that the operation is still one that he can recommend to us. So, if you will forgive the abstract editor in part and the stenographer in whole, I think you will agree with me that something has nevertheless been gained.

Dr. Joseph H. Bryan, Washington: I have been able to open up the frontal sinus in the living subject, too, but not in all cases. After having gone over the anatomic relations in the cadaver so many times, I have found out that a great many irregularities exist in the accessory sinuses, particularly in regard to the frontal in relation to the ethmoid, and it makes me hesitate when I hear this procedure, so ardently recommended as it has been by Dr. Ingals. There must be some difference in the cases that we have been having. I am quite sure that no such method as the doctor recommends can possibly cure such cases as I have had. Now, I have never yet operated on an acute catarrhal or an acute suppurative inflammation of the frontal sinus. I have had considerable experience in this line. All of my cases have been of a severe form of chronic inflammation, lasting a number of years. After going over his papers time and time again, and trying to bring myself to believe that I could follow out the same line of procedure, I have been timid and have gone to the external method, and whenever I have one of these cases I have come to the conclusion that such an operation is not possible to relieve such cases. Now, is it possible in a frontal sinus, with a prolongation extending far into the frontal bone and extending back into the floor of the orbit and into the external angle, by more drainage to cure a case of that kind? Now, in these chronic cases there is nearly always caries of the frontal region, and it is not possible to cut the bone out or cure the condition by simple drainage, which this method is directed to, as I understand it.

In his hands, undoubtedly, the entering of the frontal sinus is practically an easy method, but is it a safe method or an easy method for the average rhinologist? While sometimes it may be very simple for those who are practiced in doing this kind of work, nevertheless, a man must always bear in mind that he cannot know what there is inside of that sinus without doing the external operation.

Dr. Henry L. Swain, New Haven: There are a great many cases where we refuse or hesitate to make an external operation. We are not all as successful as Dr. Bryan in having our operations clean up. Certainly, I think there is a vast field for the procedures of Dr. Ingals in the medium cases, and in the severe cases we will bow to Dr. Bryan. I have had some severe cases, but a lot of cases we could get well by the internal method. This is safe and sane. Dr. Ingals has proposed one to us. I must say I have not done it. I am like Dr. Bryan, afraid to do it, from my knowledge of it from his description alone, even though it is profusely illustrated. I seem to get along with milder means than even Dr. Ingals suggests, but I do get the cases well, and do not have to do the external operation only very rarely.

I have had this winter three cases which anybody would suppose ought to require external operation, where there have been spontaneous external perforations into the orbital cavity, and one where the diseases went through the front plate of the frontal sinus on to the forehead. Presumably the process was severe enough to make the bone necrotic. All three got well simply by ordinary curettement of the frontal nasal duct and opening the abscess in the orbit. The bone of the external plate was not touched in any way at all. I have simply had good luck, but it shows the possibilities—that sometimes cases seem severe and yet do not require severe measures. There are three classes of cases—the ones that get well by simple curettement; those that require simple intranasal methods; and occasionally a case that requires the external method.

Dr. Hanau W. Loeb, St. Louis: I just want to mention a procedure which Halle published in the past two years, which makes all these external operations much easier, and that is to make a flap of the mucous membrane covering the superior maxilla anterior to the middle turbinate. It takes away that thickness of the wall and also permits much more ready access to the frontal sinus.

Dr. Gorge E. Shambaugh, Chicago: The more I see of chronic accessory sinus infection, the more I become convinced that intranasal surgery is the proper treatment for the vast majority of the cases. Most of the cases can be cured by this method, and those which are not completely cured are with very few exceptions, relieved of all symptoms which would justify an external operation.

In the case of the maxillary sinus I have found that by working through the nasal fontanelle in the middle meatus one can in a few seconds' time, with suitable instruments, secure an opening one-half by three-quarter inch long and one-half inch broad, which is ample for our purpose. This can be done with local anesthesia with much less shock to the individual than an opening in the inferior meatus. The old idea that an opening in the inferior meatus had an advantage because of its location near the floor of the sinus, does not hold true, thus securing ventilation of the sinus. No irrigation afterward is required.

The frontal sinus is considerably more difficult ofttimes to secure a sufficiently large intranasal opening to permit of free ventilation of the frontal sinus, and for this reason we are able less often by intranasal surgery to bring about a complete cure of chronic frontal sinuitis; but it is the rarest exception for us to find a frontal sinus infection where anything more than intranasal surgery is justified. It has been my belief for a long time that the external operation for the frontal sinus should be a tabooed operation except in the rare cases where, in spite of painstaking, careful intracranial surgery, severe symptoms persist, indicating retention and pressure and threatening intracranial complications.

Dr. Greenfield Sluder, St. Louis: I think that when Dr. Bryan takes the stand that there are cases with a ramification of the frontal sinus under the roof of the orbit, out into the external cochlear process of the frontal bone, when it runs back to the lesser wings of the sphenoid and extending more or less swollen beyond with granulation tissue, that case will in all probability not get on by simple drainage. Dr. Roe, if I remember correctly, in 1890, stated that he had deliberately left the antrum in one case filled with granulation tissue, prevented internal drain and left the granulation tissue alone, and that the case healed. Some five or six years ago I was in a frontal sinus externally, and found it not specifically enlarged or ramified, but filled with granulation tissue. The case had been operated by someone else before, and the nasofrontal outlet was blocked in solid bone. There was great headache, and the bone was so healed that it could not be handled from within, so I went into it externally and found the cavity filled with granulation tissue, but put a drain into the nose and that was satisfactory. I left the cavity filled with granulation tissue and that case healed.

I believe that the value of a satisfactory drain for all of these, whether they be frontal, ethmoidal, antral or sphenoidal, cannot be possibly too greatly exaggerated, but there must still remain a case that requires Dr. Bryan's procedure, that must of necessity justify his ideas concerning these cases. It is difficult to tell how far it really can go. In 1890 I had an antrum that had been suppurating four to five years. The operation that was done was the old Cowper through the alveolar. I kept it open with a plug, I washed it, and in some six months it stopped suppurating. It was always reinforced by coryza and healed with a few washings. The old gentleman died a few years ago. After I learned the intranasal procedure, I offered him that and explained that it was a better procedure and would relieve him of his trouble and his plug, but he declined to accept it.

Dr. E. Fletcher Ingals, Chicago (closing the discussion): Dr. Bryan thinks that if one cannot get into the frontal sinus, it cannot be operated on. This is quite right. However, I have been able to pass the probe into the sinus in ninety-five per cent of all chronic cases, but in about ten per cent I was not able to get it in the whole distance at first; then I ran a burr up perhaps three-eighths of an inch, after which the probe passed easily into the sinus and the operation was completed. You notice that these probes are of different sizes and curves. If a probe will not go in with one curve, make another one; if a large one, one and one-half millimeters, will not go in, take one that is one millimeter in diameter. If one can do the operation, possibly in five per cent of the cases an external operation may be desirable later on. I would not claim this as a cure-all by any means. The question as to whether drainage is sufficient to cure these cases or not is one that we have to determine by experience. Experience seems to show that it is sufficient in most cases, even if there are granulations. It seems to me that scraping out all of the mucous membrane in the sinus is absolutely bad practice.

I do not recall any chronic case in which I have attempted to probe the frontal sinus in which I have not succeeded—at least, after I have run the drill in for perhaps three-eighths of an inch; but I will admit that it has occasionally taken me as much as an hour to do it. But if I can get the probe in once, the next time that I put it in I can make a large opening very easily.

I believe that practically all of the cases will heal if we give them drainage, and I think that most of you will believe this.

Dr. Robert C. Myles, New York City (closing the discussion): If you are going to obliterate, you have to obliterate completely; but if you leave one small piece of mucous membrane in the sinus, you will have trouble. Patients are coming to me all the time from the general surgeons with imperfect drainage. If you will notice, in my paper I mentioned the fact that they opened the sinuses and left them with a so-called polypoid condition; they simply packed them. The reason of that is that these are not granulations, but an edematous condition called granulations. They will disappear; the condition is the same as the watery eye or the postorbital eye. It is a circulatory condition and not a pathologic one. I admit, of course, that granulation sometimes comes from diseased periosteum.

But fundamentally, the crucial point in all of these cases is to get it open and maintain it open and keep it open; and the results in this way are better so far. I believe that five or ten per cent of these cases have come to external operation, but we are now able to cure a large percentage of them by the internal method. The question of the necessity of distinction enters. I have lots of cases which heretofore I would have determined to require the external operation, which are now operated by the internal procedure.

Vincent's Angina. By THOMAS HUBBARD, M. D., Toledo.

(Published in the present issue of THE LARYNGOSCOPE.)

DISCUSSION.

DR. EMIL MAYER, New York City: I would take some exception to the originality of the use of glycerin of iodin. When I first called attention to this infection we know so well now, I then spoke of the use of iodin, iodid of potassium, and glycerin as a local application. I have since learned to know the tremendously valuable effect of the salve, either injected intravenously or applied locally.

A very short while ago a patient presented himself at the Mt. Sinai Hospital, New York City, with a very large ulceration at the under surface of the tongue that had been existing for a couple of months and due to the bacillus Vincent. A local application of the salvarsan with an intravenous injection, the Wassermann having first been proven negative, resulted in a cure within forty-eight hours. I would like, however, to see some of the results from the application of the salvarsan locally, without the intravenous injection. It is very possible, indeed that the application itself would do all that we would require, and the patient might not even require an injection; but it does not mean by any means that because a patient has recovered that that patient has had syphilis, but that this arsenical preparation has a beneficial effect on the treatment and cure of this disease.

DR. THOMAS HALSTED, Syracuse: About a year ago a physician consulted me, with the statement that for six weeks he had had a severe tonsillitis. He had contracted this, apparently, from dancing one evening with a school teacher, who had at the time a sore throat, which was diagnosed the next day as diphtheria. She died in the course of ten days from Vincent's angina. This doctor developed within a short time an ulcerative sore throat. He was seen by a number of specialists, but the diagnosis was not made, and he finally came to me. I found an extensive and deep ulceration of both tonsils and a marked cervical adenitis. The ulceration was soon proven to be Vincent's angina microscopically. A short time before this my attention had been called by a general practitioner to the possible use of enesol in the treatment of

Vincent's angina. Enesol is a French preparation of arsenate of mercury. We used enesol hypodermically and did nothing else. There was no local treatment whatever. The improvement was marked, and at the end of six days, during which time three treatments were given, the ulceration was perfectly healed. Since this case I have treated not less than six or eight cases of Vincent's angina with enesol, and all of them with most satisfactory and rapid improvement. I think enesol is a specific for Vincent's angina, and preferable to salvarsan, because of the greater safety and simplicity of the treatment.

Dr. Thomas Hubbard, Toledo: I am very glad that Dr. Mayer mentioned the use of iodin.

This formula is iodid of zinc, iodin, glycerin. Whether it is more penetrating than the ordinary iodin glycerin preparations, I do not know.

As to the choice of the arsenical preparations, I think that is a question of clinical proof; Dr. Halsted's report only goes to show that the use of some member of the arsenical group is a dependable treatment of Vincent's angina type of infection.

General Streptococcic Infection Through the Accessory Sinuses and the Tonsil. By T. H. Halsted, M. D., Syracuse.

Chronic suppurations in the sinuses are by no means local diseases in the sense that their effects are confined to these organs.

It is the chronic infections, the staphylococcic, pneumococcic and streptococcic, that are perhaps of greatest importance, because of the insidious and slow degeneration which their absorption produces in the whole system. In these which are so commonly overlooked and their true significance so little appreciated by both specialists and the general practitioner.

Of equal and perhaps greater importance than local infections of the nose and their adnexa, though only in degree, are the infections of the teeth and of the tonsils.

The tonsils, whether the faucial, lingual or nasopharyngeal, in a normal healthy condition, undoubtedly offer a hindrance and are a barrier to the farther ingress of pyogenic organisms to the lymph or blood stream. Conversely in a diseased and dilapidated condition, these same structures offer a habitation and afford the easiest way, becoming the open portal, for the passage beyond of the invading army of micro-organisms.

A mixed infection of the tubercle bacillus and the streptococcus is of frequent occurrence. Just as tuberculosis is conveyed from one individual to another through the inhaled sputum, and is mildly contagious, so probably is rheumatism—i. e., infectious streptococcic rheumatism.

It is a matter of constant clinical observation that with enlarged and diseased tonsils, not regarded as tubercular, enlarged cervical glands, thought to be tubercular, are often associated. The removal of such tonsils is usually followed by a reduction in the size of the enlarged glands.

Endocarditis and arthritis often supervene or follow an attack of acute tonsillitis.

Chorea is now known to be a rheumatic or streptococcic infection of the nervous system, that the improvement results because of the removal of the primary focus of infection, the tonsil and the adenoid.

In childhood, tonsillar and lymphoid tissue is most prone to acute infection, and it is at this time of life that acute inflammatory rheumatism and endocarditis, usually following an acute tonsillitis, is most likely to occur.

We shall soon be classifying a great many affections, now regarded and treated as separate entities under the general classification of streptococcic disease.

The streptococcus is transmitted from one individual to another through direct or nearly direct contact, such as in the act of coughing, sneezing, kissing, the organism being inhaled into the mouth with the mucus from the infected person, or it may enter through traumatism by means of an infected instrument, or, again, it may reach the mouth through food, particularly milk, the milk having been infected by those handling it.

As for the treatment of streptococcic infected tonsils, complete enucleation (tonsillectomy) is the rational procedure.

After the tonsils are removed the patient may still show evidence of remote or general streptococcic infection. This means simply that there still remains a focus somewhere, possibly in the adenoids. Possibly the tonsils were not completely removed, even though the operator was most careful, a small piece, no larger than a pea, remaining in the supratonsillar fossa or at the base, adjoining the lingual tonsil; and if such is the case, this fact should be recognized and dealt with by a second operation, the sooner the better. Again, an apical tooth abscess may have been overlooked or the difficulty may lie in a secondary focus in the gall bladder, the appendix, some joint, the endocardium, pleura or other localized area.

The Susceptibility to Infection Manifested by the Remains of Incompletely Removed Tonsils. By Hanau W. Loeb, M. D., St. Louis.

If a portion of the tonsillar lymphoid tissue is left after operation, especially if it happens to contain a crypt, it is very much inclined to persist in *statu quo*. It may never occasion any unpleasant result, but it is present nevertheless with its susceptibility to infection, reduced though it may be. What is considered an atrophied tonsil usually signifies that the tonsil tissue has become somewhat more covered by the anterior pillar and has in part simply disappeared from view.

There must be a not inconsiderable number in which tonsillar stumps remain, even in the practice of the most experienced operators, and the writer presents five cases showing infection originating in such tonsillar remains.

These cases definitely show that small masses of tonsil tissue overlooked, or at least not removed at the operation, are susceptible of infection with remote effects similar to those which follow acute tonsil infections.

They must have their counterpart in the practice of other laryngologists, and from his own experience must be common enough to constitute a fairly definite clinical entity.

They present a decisive argument against any form of operation which does not contemplate the entire removal of the tonsil, especially where there has already been some infective processes originating in the tonsil.

They suggest the advisability of following up cases of tonsillectomy to determine whether any portion remains and whether it has become a focus of infection.

DISCUSSION OF PAPERS OF DR. T. H. HALSTED AND DR. HANAU W. LOEB.

Dr. George B. Wood, Philadelphia: I desire to call especial attention to the difficulty in recognizing when a tonsil is responsible and when it is not responsible for a given infectious condition. According to my own experience, inspection of the tonsil itself in the majority of cases side little in this determination. Small innocent-looking tonsils can give rise to severe general infections, while, on the other hand, large swollen tonsils with masses of epithelial debris in the crypts are frequently found in apparently normal individuals. Of much more value is the history of repeated attacks of tonsillitis, their relation to the general infection, and the presence of cervical adenopathy. The bacteriologic study of the contents of the crypts of the tonsil will often give important data. This study can be carried further by determining the relation of the bacteria obtained from the crypts to the blood reactions of the individual. In a person suffering from chronic tonsillar absorption for a considerable length of time, it is probable that a certain amount of immunity against these organisms has been established. If agglutination of the bacteria from the crypts or a complement fixation can be demonstrated, there would be good reason to believe that a certain amount of absorption had taken place through the tonsil. From a somewhat limited number of cases this reaction has been found in a certain number of chronic cases, though in acute tonsillar infections the immune bodies could not be demonstrated, probably becaues sufficient time had not elapsed for their formation. The importance of these reactions can only be determined by a large series of cases, preferably carried out by a number of observers.

Concerning the possibility of recurrence of tonsils after removal, I believe that a certain amount of actual recurrence can take place. In these cases the new tonsillar tissue is superficial and is found simply as small lmyphoid follicles scattered over the surface of the scar tissue. More frequent and more serious apparent recurrences are simply hyperplasias of tonsillar tissue left behind at the operation.

Dr. Burt R. Shurly, Detroit: Many people think that when their tonsils are removed they will never have another sore throat, and that is not probably explained sometimes by the man who does the operation. Again, we have certain islands of tissue that are perhaps more frequently left in place, and undoubtedly, if we take into consideration all the different operations we have done throughout the years, we will find a very considerable number of incomplete operations. On the anterior pillar itself, very frequently even when we think we have accomplished a very complete operation, we find tiny islands of tissue which can only be observed by a most thorough examination. Many times when we think we have done a most complete operation and go back over the ground again, one, two or three times, we still find some tiny islands of tissue we have left; if this happens to be on the anterior pillar, it frequently gives rise to more trouble. I do think, though, that there is great danger of exaggeration as to just how much damage results from leaving some of these tiny islands of tissue.

Dr. Thomas Hubbard, Toledo: I have in mind a throat in which there was perfect enucleation of the tonsil, and yet the patient returned several times and said that she was having recurrent attacks resembling those which she previously had. Finally, one day she returned with a distinct swelling. I was able to pass a probe into the fistulous tract, which evidently led into the muscular tissue. There was no tonsillar tissue left at all, but showed a most thorough operation. It is probable that sometimes we leave one of the small fistulous tracts which have been part of the peritonsillar suppuration at some previous time. I would say that during these attacks she had a recurrence of the arthritic symptoms, just the same as when the attacks were due to tonsillar and peritonsillar inflammation.

Dr. J. Payson Clark, Boston: There is one point in Dr. Halsted's paper which I would like to emphasize, and that is the possible relation of unsuspected conditions of the teeth to general infection. I have been surprised at the number of cases in which a tooth giving no symptoms locally at all, was in very bad condition, and treatment of that tooth at once relieved the general symptoms.

I have been surprised once or twice, and several of the cases I have been able to explain, where I was perfectly positive I removed the tonsil, capsule and all, where the capsule was perfectly smooth and the fossa quite empty after operation, and a year or more afterwards there has been an appearance of tonsil on one side or on both sides. My explanation was that some of the lymphoid tissue of Waldeyer's ring in the healing process has been drawn up into the region of the tonsil. That tissue drawn up differs from ordinary tonsillar tissue in that no crypts appear in it. I have never seen any inflammatory process.

Of seventy-three cases operated at the Massachusetts General Hospital before we had begun to do the capsule operation, in sixty cases the tonsil tissue was still visible; twenty of the cases gave a history of one or two attacks of sore throat since the operation. Of these attacks only ten had been definitely determined upon to be tonsillitis; at least two-thirds of the cases of tonsillotomy had had no subsequent trouble. There were twelve cases of illness since the operation, but none of the cases of illness were of the kind to be attributed to any infection from the remains of tonsillar tissues; these cases were all children.

Dr. Henry L. Swain, New Haven: The fact that we do not have more knowledge of the return of tissue after enucleation, I believe is due to the fact that in lots of our cases the person is not as susceptible as are those from whom we do hear. Certain cases show marked susceptibility to inflammatory seizures. If you leave the slightest bit of tissue, you get a report of sore throrat and constitutional symptoms, etc. In other cases you can leave three times as much tissue and there is no report of any trouble whatever.

In my home town, a year ago, we had an epidemic of streptococcic sore throat, due to milk infection. In all, we had one hundred and twenty cases. I took a great deal of interest in looking into the question of the presence or absence of tonsils. Out of that group there were between twenty and thirty cases who had had thorough removal of the tonsils—absolute tonsillectomy. None of us would have been dissatisfied with the results of the operation had we done it ourselves. In these cases we sometimes got more trouble than in those in which there is a abundance of lymphoid tissue. The five cases which gave me the most trouble, with abscess formation, edema of the larynx, were in cases of complete tonsillectomy.

The probabilities of general infection such as Dr. Halsted speaks about is illustrated in a most interesting case I had recently, where the patient had a simple sore throat and then developed general poisoning of the system from the effects of inflammation. As a result of that he had a large abscess at the back of the neck, which seemed to have a formation of membrane in it, so that one expected to find pseudodiphtheritic discharge. He was given autogenous vaccines in large doses, and it was well carried out in every particular. Six weeks after the original sore throat he came down with another sore throat, in which he had exudate over four distinct strips of tissue, both tonsils and both lateral columns of the phraynx were covered by a false membrane. Cultures from this showed to be streptococcus. He did not have a distinct sterptococcemia.

Dr. Greenfield Sluder, St. Louis: It is an interesting question all the way through, and that is the matter of peritonsillar infiltrate. The aftermath of the case, the future course of the case, frequently has been influenced by the infiltrate that was about the tonsil. That infiltrate seems to me to frequently take the part almost of the tonsil itself. I have seem them a few times, and latterly I have seen a few cases in which the infiltrate behaved as the tonsil—began with a sore throat and suppurated in both cases. The tonsil was perfectly enucleated and preserved in a bottle. I make it a practice in operating upon cases to save the tonsils from every individual, and later on I frequently find that I possess a number of tonsils and capsules which are perfect; but, as Dr. Clark has expressed it, the lymphoid tissue of the base of the tongue has grown up into the fossa and looks very much like a tonsil. The peritonsillar infiltrate may, furthermore, hypertrophy and later on look like tonsil, as if something had been left, unless very carefully inspected. With that end in view, some three months ago, in the presence of a very large infiltrate, I removed the tonsil with a guillotine and found something which looked like the tonsil still in the throat. I then took out an infiltrate, the size of the original tonsil, and the infiltrate on the opposite side remained. Subsequently sore throat developed, and developed in the infiltrate that was left. The side from which the infiltrate was removed escaped.

Dr. Harmon Smith, New York City: I believe that nature requires a certain amount of lymphoid tissue in that region, and, just as we see when we remove the soft palate for malignancy, the posterior tips of the turbinate hypertrophy to prevent regurgitation of food in the pharynx, so the remaining lymphoid tissue undertakes to carry on that element of protection which the tonsils previously did. I do not believe that spontaneously tissue resembling the original tissue will spring up. I know of instances in which, three or four times after the removal of the tonsils, from childhood on up to puberty, where each time every microscopic evidence had been removed, yet there still recurred certain islands of lymphoid tissue, and around the islands there was formed a certain kind of capsule.

If you remove tonsils and leave lymphoid tissue at the base of the tongue, in such infections as from milk, etc., the lymphoid tissue at the base of the tongue will produce tonsillitis just the same as the original tonsil.

Dr. Joseph Goodale, Boston: In certain children who may have tonsils and adenoids removed by operation we may have a condition of partially developed anaphylaxis. It is not a true vasometer rhinitis, but a condition of snuffing, blocking of the nose, and the symptoms which appear are those of a tendency to taking cold. There may be possibly a portion of tonsils left, but what we should do is to look somewhat further than the throat. We should see if the child is taking more milk than it is accustomed to in the summer, or an extra cup of cocoa, or an extra egg; it seems to me, before we should proceed to a further operation on that throat that we should examine very carefully this question of diet. I would suggest that any of this unusual food should be diminished and restricted, and I am sure you will find that a certain percentage of these cases will lose their symptoms. They will freely disappear without another operation, or loss in weight, but a gain in weight.

Dr. Hanau W. Loeb, St. Louis (closing the discussion): I have spoken of the actual leaving of portions of the tonsil in some instances by myself, and in some instances by other operators. I am sure that if operators will examine their cases, one, two and three months after operation, they will find not infrequently that a small mass of tonsillar tissue remains. It so happens that in two instances I was able to verify the fact that I had left a portion of the tonsillar tissue there, because I had the tonsil in a bottle, and a careful examination of the capsule revealed where a very minute portion had been omitted.

With reference to the inclusion of some tonsil tissue in the scar, I feel, at least in one particular case I reported, that the inclusion was there before the scar; in other words, I left a mass there and the scar covered it over. This was the case in which there was a minute abscess in a little crypt. This patient had several attacks of appendicitis, which went on to operation, and I feel the little piece I left there may have been responsible.

We should not hesitate to let our patients know when we have performed an incomplete operation. This is better than having an acute infection come on and someone else tell the patient. I do think we ought to protect ourselves in that respect. I, for one, never hesitate to tell the father or mother of a child that I have left a small portion of the tonsil. Of course, years ago that was fairly common, but I am thankful to say it is uncommon now.

I wanted to bring the matter up to the association, not as an argument for tonsillectomy, but for complete tonsillectomy, and also to assert that the mere statement that an operator is going to do a tonsillectomy does not signify that he is doing or has really done a complete tonsillectomy operation.

Presentation of Pathologic Specimen of Large Tumor of Pituitary Gland.

By Robert C. Lynch, M. D., New Orleans.

The man was a quadroon, about six feet one inch tall, with hands and feet somewhat larger than usually seen, though not sufficiently so as to be suggestive. He was well developed, to the point suggesting fat, with a fairly developed chest and mammary gland, and small hips, resembling in a degree the feminine type.

About the end of July, 1916, he had profuse nose bleed, following heavy work, with recurrences daily, when the nose began to block up, voice became hoarse and the eyes began to protrude. Upon examination the septum was deviated strongly to the left, the right nostril filled with an irregular, spongy, red mass which bled easily upon manipulation;

pupils were dilated and did not respond to light or accommodation; pulse, eighty; eye grounds show slight pallor with double temporal hemianopia, or loss of vision over the outer half of each eye. A specimen of tissue was removed and the laboratory reported back: "A sarcoma."

The patient in December had the same symptom complex apparent, only slightly aggravated. The exophthalmous was very marked, the superior maxillary prognathism was apparent The mass in the nose was as described and could be seen in the nasopharynx.

An attempt to remove the mass through the nose only succeeded in getting out a small part. The tissue was reported as granulation, or inflammatory, but not malignant. Upon the second trial a facial decortication was done, and at the same time the right antrum opened. This gave plenty of room to remove the mass more completely, but when the roof of the nose and over both orbits were found pulsating, and with the finger he could feel the meninges and see the dura, he was convinced that it was time to stop, fearing lest the sudden loss of support would produce a hernia.

The nose was packed, a large postnasal plug introduced, tying the attached string to the ear. He was returned to bed in good shape, but upon waking from the anesthesia he caught the string and pulled upon it with such force as to force the postnasal plug through the exposed dura and into the brain. He died from a basilar meningitis.

The specimen was presented for observation, together with the x-ray plates and a microphotograph of the tumor which is characteristic of pituitary gland.

Report of a Case of Abscess of the Frontal Lobe of the Brain. By ROBERT C. LYNCH, M. D., New Orleans.

Mrs. L. had been an invalid and a sufferer for considerably more than fifteen years, her condition varying only as to the degree of her suffering which was often very great. The pain and headache from time to time confined her to bed for varying periods, and frequently the intensity was so great as to cause convulsions, accompanied by a severe rigor and a bending backward, so that whiffs of chloroform were used to bring about relaxation. There were varying terms of slow recovery to a condition that enabled her to leave her bed, but she never was well, and had headaches which were almost continuous.

In 1907, following right sided abdominal pain, an ovary was removed, with no improvement. In 1909, a panhysterectomy was performed; following this a period of relief ensued, but in 1912 the headaches grew so intense that a rhinologist was consulted. A right maxillary sinusitis was irrigated for nearly a year, but with only varying relief. A change was made, and the second colleague removed the right middle turbinate, opened the right frontal intranasally, and curetted the ethmoid cells. There followed a long period of treatment without relief.

Late in 1913 an acute exacerbation in the right frontal sinus occurred demanding an external operation. There seemed to be no improvement afterward.

Three years later, after careful examination, Lynch found the right antrum to have a large opening through the inferior meatus, and irrigation of this cavity showed slight pus at times, but which bore no relation to the headaches.

The postethmoid region seemed full and bulging, and he was able to wash nearly a teaspoonful of nonoffensive pus from the sphenoid sinus. Treatments of this character seemed to be followed by considerable relief from headaches and relieved the chronic hawking and spitting complained of, though she had during the period of this treatment one of the chill-temperature headache attacks, which seemed to have a certain regularity as to recurrence, regardless of the treatment employed.

There ensued now a gradual decline in body strength and a slight dullness of mentality, with no desire for food and persistent headaches of increasing intensity, blood counts rising to 17,000 with 90 polymorphonuclears. Blood pressure, 110—rather low; no focal symptoms of any kind, as determined by a most searching examination.

The decline reached the state of involuntary micturition and defecation, mental dullness to almost coma, and inability to suck fluids through a straw, to be roused only on the greatest excitement, and speech then inaudible—still no focal symptoms.

On her return to the hospital, some months later, Lynch determined that the symptoms were those of brain abscess in the silent area—the frontal lobe; accordingly, he opened up the old frontal sinus wound, which was apparently perfectly healthy and sound, but to his surprise there existed a small cavity holding about fifteen drops of milky pus, looking much like an old mucocele. On removing the membrane from the posterior wall the bone looked normal and was intact completely. He could not feel satisfied, however, that the findings were sufficient explanation for the symptoms, and took down the posterior sinus wall. The meninges seemed normal and not adherent in any direction, and there was no bulging or undue pressure apparent. He split the dura, and the brain surface seemed normal; so he explored with aspirating syringe and large needle, applying suction as soon as the needle was below the surface. After about an inch deep, following the line of the base of the skull and away from the longitudinal sinus and under the anterior horn of the ventricle, there gushed into the syringe about three drams of yellow green pus. He withdrew the needle and prepared the bone opening and area for the reception of one of Mosher's wire gauze drains; reintroduced the needle and withdrew four drams of pus. Then he opened with a scalpel what he thought was an abscess cavity, but try as he might with needle, knife or forceps, he could find no evidence of the abscess. Finally, he passed a small rubber tissue drain into the brain, in the direction and to the depth of which he had aspirated pus and dressed the wound. Upon recovery from the anesthetic the patient was conscious, and in six hours addressed him voluntarily, complaining of some soreness about the wound, but not of much headache.

The pus showed staphylococcus aureus in pure culture, but not active, growing feebly on culture.

DISCUSSION.

DR. THOMAS H. HALSTED, Syracuse: In this connection I shall report the present condition of a case of hypophyseal cyst which was operated two years ago and reported to this society in 1915. It is the case of a little girl, eight years of age, who at that time had as the leading symptoms great increase in size of her head, great increase in weight, weakness, constant shaking of head with inco-ordination of movements, so that she was unable to feed herself; optic neuritis, sharp headaches, very striking change in color and texture of hair, polyuria, and disturbed mental acuity. The operation was done through the nose under local anesthesia; it was the modified Hirsch operation, and the growth proved to be a cyst of the hypophysis. The patient was much improved temporarily. Some months later the cyst recurred and a second operation was refused by the parents. It is now about three years since the original operation. I have not seen the child in year, but saw the father within the past six months. He said that the child now has simply an aggravation of all the symptoms; she has become very fat and large with great weakness, and the blindness is nearly total.

Dr. Henry L. Swain, New Haven: I would like to ask Dr. Lynch what was the condition of the brain of this patient.

I had a case which I saw but once, in which there was bitemporal hemianopsia which was due to a tumor of the pineal gland, in which there were headaches somewhat similar to the second case.

Dr. Robert C. Lynch, New Orleans (closing the discussion): In reply to the question by Dr. Swain, as to what was the condition of the brain of this patient, I would say that the brain did not show anything pathologic at all, except that the coverings represented the usual findings of death from meningitis.

We scraped up in New Orleans three other cases of pituitary tumor, and all of them showed on x-ray a very marked enlargement and beginning protrusion backward of the sella turcica. They all showed the same phenomena as regards the eyebrows, and they all showed the symptoms of lack of function of the pituitary gland.

Three Bronchoscopic Cases of Dentist's Origin. By Burt R. Shurly, M. D., Detroit.

As these three cases occurred during the last decade in a city of an average population during this time of 500,000 people, and as we have an estimated population of over 100,000,000, it might be fair to conclude that possibly six hundred cases of similar accident had occured in the United States and Canada, perhaps, during a similar period. It might, therefore, be of importance to devise a special protective device to prevent the sudden inhalation of foreign bodies during dental procedure.

Again, the question of the medico-legal problem, with questions of responsibility as to whether these accidents involve ordinary care in dental procedure, might be of interest, although exceedingly delicate ground to tread upon, as one of these cases involved a very considerable law suit, and the other two were allowed to pass with nothing more than an attempt to collect the surgeon's fees from the dentist. The medico-legal possibilities did not come to actual trial.

The peculiar relationship of laryngology and clinical medicine and its great importance, one to the other, was again illustrated by the fact that two of these cases first came under my observation as referred cases for clinical examination of the throat and chest on account of long, persistent cough which simulated pulmonary tuberculosis.

Case 1: Miss S. stated that her cough dated immediately after the extraction of tooth and gas anesthesia. Radiogram showed tooth. Trachea was not cocainized and bronchoscopy failed. Tracheotomy and subsequent bronchoscopy resulted in removal and cure.

Case 2: Married woman. Cough followed nitrous oxid and tooth extraction. There was a marked odor of rubber. The air supply of lower part of lung was cut off, and piece of hard rubber, which had been a part of a dental mouth gag, was brought up to the trachea, slipped from forceps, but fortunately coughed up soon after by the patient.

Case 3: Mr. L. W. B., age forty-nine years; architect by profession; was receiving treatment from a dentist preparatory to filling a tooth. The cavity was treated with a dental burr, which in this particular case was held between the thumb and forefinger during the process of application. This tiny instrument suddenly slipped and was inspirated into a lower division of the left bronchus. After this remained in the bronchus for ten days, the patient was sent from his home in the central part of the state of Michigan, to the Detroit Eye, Ear, Nose and Throat Hospital. The x-ray examination reported—anteroposterior and lateral plates were made of the chest: "We find a shadow in the lower left thoracic region, which we think should be interpreted as a metallic foreign body in the lower left bronchus." After a thorough cocainization with novocain of the respiratory passages, with cocainization advanced as the tube was introduced and followed to within the lowest terminations possible, and assisted by Dr. Hickey, I was able to extract this foreign body, which was pointing with the needle part upward. The patient recovered completely without symptoms.

DISCUSSION.

DR. THOMAS HUBBARD, Toledo: It seems that the position of the patient's head in the dental chair is very conducive to the loss of a foreign body in the throat or air passages. Fortunately, most of them go into the gastrointestinal tract. I have in mind a case which recently occurred of a nurse taking dental treatment, in which a small dental burr was lost.

She was taken violently ill and returned to the city with violent abdominal disturbances. The x-ray failed to locate the dental burr; the operation was appendectomy, the surgeon expecting to find the dental burr in the appendix. Had this girl not had the surgical operation, the appendectomy, in all probability the whole thing would have been laid to the dental accident.

Another case comes to mind in which a tooth was lost and remained in for several years and was then spontaneously expelled. The patient was not very ill any of the time and finally expelled the tooth spontaneously.

The third case is that of a patient, a woman, who carried a fragment of Allen's dental cement, which is quite as firm as a tooth structure, in her left lung for seven months, and during that time had all the symptoms of advanced tuberculosis, with a very considerable abscess cavity around it. This brings up the question, as suggested in these cases, of the legal complications. In justice to the dental profession, I believe we should take them into our confidence in all cases of liability on the part of the dentist, and he should be asked to see the operation. This relieves us of any possibility of unfair treatment towards the dentist.

DR. HARMON SMITH, New York City: I wish to call attention to a case more or less similar to the third case mentioned by Dr. Shurly. The patient was having his back upper molar tooth drilled by a burr, as represented in the third case. The dentist dropped the burr while the patient was in a semirecumbent position with his head backward and drawn to one side. The dentist took up a pair of forceps and when he went to find the burr it was gone. He became alarmed and told this gentleman to have an x-ray taken. The gentleman felt no inconvenience, and instead of that went to a board meeting downtown, and in due course of the day had the x-ray picture taken. It showed the burr in the upper left lobe, and he was then taken to the General Memorial Hospital. He was bronchoscoped, and the bronchoscopist attempted to remove it. He tried for a while and did not succeed, and asked me to come up. I failed, and we decided then to have Dr. Jackson see the patient. In the meantime another gentleman in town was suggested, and he came and failed. Dr. Jackson came on, and he had another x-ray taken to see exactly where the foreign body was located, and he put it down as a case in which it was impossible to obtain the foreign body. It had lodged in the upper outer lobe of the lung. It was recommended by the surgeons that part of the lung should be removed, but the gentleman succumbed to the operation. The burr, however, was obtained.

Dr. Albert C. Getchell, Worcester: I will add two cases to Dr. Shurly's; one following extraction of a tooth under ether. The patient was operated upon and recovered, and the bill was paid by the society by whom the dentist was insured. The second case was a patient seen recently with a cough following immediately upon extraction of a tooth. This patient developed lung abscess, was operated upon and recovered, and then had a recurrence of the abscess.

Dr. Carl E. Munger, Waterbury: I know of a case in which a dental burr was lost and the fluoroscopic view showed it just below the vocal cords. Tracheotomy was done and no dental burr was found. I should say that during the administration of the ether there was a good deal of struggling on the part of the patient, and that the burr was coughed up into the nasopharynx and lodged there. Next morning the patient found something in his mouth and spat it out. It was the dental burr. In this case the dentist paid the bill.

Dr. Bryson Delavan, New York City: I was familiar, as everyone else in our city was, with the case reported by Dr. Harmon Smith. The thing which impressed me most with regard to that case was the futility, as a general rule, of the radical operation for the removal of a foreign body. In looking over a long series of those cases it seems to me, while the observation may not be exactly germaine, unless the bronchoscope will succeed in removing the foreign body, the patient's chances of life are better if time is given before placing him in the hands of a surgeon, than if placed at once in the hands of a surgeon and an operation for the removal of the foreign body performed promptly. This was exactly my attitude at that time.

Dr. Emil Mayer, New York City: I recall the case of a gold crown of a wisdom tooth which was inhaled by a patient. With the valuable help of our member, Dr. Arrowsmith, I was able to remove this successfully. The case occurred about two years ago. One interesting point in regard to that case was that the anesthesia was rectal, which prevented anything like a struggle on the part of the patient, thus possibly dislocating the foreign body; and another point of interest was that as I removed the gold crowned tooth, Dr. Arrowsmith was standing guard over the patient, with a pair of forceps in his hand, and as that large crown was brought into the mouth and slipped from the grasp of the forceps, Dr. Arrowsmith promptly grabbed it and brought it out.

Dr. Robert C. Lynch, New Orleans: I would call attention to the case of a lady who was having a set of false teeth made and the dentist was using plaster of Paris as for modeling. He put in a cup filled with plaster of Paris and pushed this up, forcing her head back, and the plaster of Paris went down into her lung. This was five years before I made a bronchoscopic examination. I removed nine pieces of plaster of Paris from both lungs. I also found at that time a very marked constriction of the bronchials, and these I dilated, relieving the persistent spasmodic cough completely.

Dr. Stanton Friedberg, Chicago: We may divide the accidents of work on the teeth and other dental accidents into two classes: First, accidents that occur at the time of operation; and, second, accidents that occur from insufficiently attached or loosely attached crowns and bridges.

In one of my cases the cough came on immediately after anesthesia for extraction of a tooth. The cough persisted for a number of months, and the patient was sent to Colorado, where a picture was made, and she then returned to Chicago. There was a small abscess in the lower part of the right lung. The tooth was recovered by upper bronchoscopy, but the abscess persisted. The patient was under observation for three to four months afterwards, without perceptible improvement.

Another case was that of a man who in an intoxicated stupor loosened a bridge consisting of three teeth, which he aspirated into the left bronchus. A picture showed the bridge. On attempting to cocainize the larynx, hemorrhage of the lung started. The tube was introduced, but it was impossible to see anything. A second attempt was made under fluoroscopic bronchoscopy, and although the hemorrhage recurred the foreign body was extracted.

In the third case, that of an aspirated dental broach, upper bronchoscopy could not be done on account of the inability of the patient to open his mouth. In consultation with his surgeon, inasmuch as his symptoms were not acute, we decided not to do a tracheotomy, but to wait until the swelling about the jaw subsided. On account of the fine point of the broach the patient was advised to refrain as much as possible from coughing. Fortunately for him, however, the broach was coughed out several days later.

Dr. John F. Barnhill, Indianapolis: Five years ago some one in Indiana consulted me concerning his daughter, who lived in New Jersey. She said she had had some sort of nasal operation, and on the way home was seized with asthma, and he wished to know what could be done. I suggested that possibly some foreign body had gotten into her larynx or trachea. Later he consulted me again, and requested that he consult Dr. Jackson. She started to Pittsburgh, and on the way coughed out a complete turbinated body that had in some way been inhaled during this operation.

Dr. Burt R. Shurly, Detroit (closing the discussion): I have nothing more to add except to emphasize the fact that there are really a great many of these cases, apparently. If we got them all together there would undoubtedly be a certain number of cases of lung abscess, the details of which have not been properly looked into, which would prove to be of foreign body origin.

Sodium Bicarbonate in Ether Anesthesia. By George B. Wood, M. D., Philadelphia.

Modern methods of investigation have shown that both ether and chloroform anesthesia, when prolonged for over thirty minutes, are accompanied by a distinct lowering of the alkali reserve of the blood. It is probable that this mild transient acidosis is a most important factor in the production of post-operative vomiting. It has been further shown that the alkali reserve of the blood can be increased by the administration of sodium bicarbonate, and it is, therefore, a most rational procedure to use this drug routinely as a preoperative prophylactic measure against excessive postoperative vomiting.

DISCUSSION.

Dr. Emil Mayer, New York City: I would like to ask Dr. Wood which dosage of bicarbonate of soda he finds essential in children prior to operation—that is, if one must start with a certain amount of dosage, what practical dosage he has found beneficial.

Dr. Robert C. Lynch, New Orleans: I had a sad accident occur to a member of my family which brought this subject pretty closely home, and since that time I have used bicarbonate of soda as a preliminary to all ether anesthesia. Lately we have changed from bicarbonate of soda to citrate of soda as being a little bit more agreeable to the patients. We begin three or four days ahead of the time—that is, preceding the anesthesia—and give doses of bicarbonate of soda or citrate of soda, five grains, and of the former one-quarter of a teaspoonful three times a day. In those cases where we are suspicious of an inclination of the patient to develop evidences of acidosis, we follow the anesthesia always with a Murphy drip, five per cent, glucose solution, one-half pint. This gives our patients very much more comfort and freedom from vomiting. I think the thing is extremely important. It was suggested about three years ago to Dr. Peck, who adopted it. We find that during the intense heat we see many more cases of acidosis occurring then we do in the winter; and always during the spring and throughout the summer months, when we submit a case for general anesthesia, we never omit the preliminary soda treatment and the postoperative five per cent glucose.

We find, also, that the administration of codein and morphin after operation will increase the quantity of acetone in the urine, and predispose to the cyclic vomiting.

Dr. George B. Wood, Philadelphia (closing the discussion): In answer to Dr. Mayer's question, the dosage should be approximately one and one-half grains of sodium bicarbonate to each year of the child. It should be started the day before the operation, given preferably one-half hour before meals, the last dose being given one or two hours before the operation.

I have not been in the habit of using sodium bicarbonate after the operation unless there is evidence of acidosis, as manifested by constant vomiting or other symptoms, when it should be given by the "Murphy drip."

One other preoperative measure which I think should always be attended to is the proper feeding before the operation. The restriction of food should only be sufficient to assure an empty stomach when the ether is given. The most severe case of acidosis following anesthesia which I have seen was one in which the family physician had, without my knowledge, practically starved the child for twenty-four hours previous to the administration of the ether.

Removal of Foreign Bodies from the Larynx, Disproving Previously Made Diagnoses. By Hill Hastings, M. D., Los Angeles.

The rapidly growing use of direct laryngoscopy is showing up many incorrect diagnoses, especially in children, where foreign bodies were found in the larynx and trachea. The increasing number of them makes one feel that it is worth while to report all such cases.

Case 1.—Baby L., aged seventeen months, had been sick for a week with "croup," with gradually increasing obstruction to breathing. The father, a physician, and a brother practitioner, had been treating the patient with the feeling that the trouble was "croup," with slight bronchitis. No diphtheritic membrane had been seen in the throat, and cultures from the secretion had been negative for diphtheria. There had been slight respiratory obstruction and a little fever—100.6 degrees the highest. The baby was asleep in bed at the time of our consultation, and was breathing with audible roughness, but without cyanosis and without any considerable difficulty. The possibility of foreign body impaction was suggested, whereupon the father said that he dated the trouble to a little choking spell which the child had had when fed some soft boiled eggs; but that the child had not really suffered much until two or three days later, when the increasing croupy cough and cry and a little fever had made him disregard the choking event. On waking the child its crying increased the dyspnea and brought on some cyanosis, which subsided quickly when the child again became quiet. Indirect laryngoscopy was a failure. The father preferred to await the result of X-ray examination and the use of simple therapeutic measures before allowing direct laryngoscopic examination. The X-ray examination was negative. The child's obstruction grew gradually worse, and direct laryngoscopic examination was agreed to. After a consideration of the danger of operating without a preliminary tracheotomy, it was finally decided to do a tracheotomy. With the use of Jackson's small-size laryngeal speculum, a piece of egg shell was found embedded in the larynx, between the cords, protruding into the glottis. The egg shell was easily removal. Convalescence was uneventful. The tracheotomy tube was not removed for three or four days because of the difficulty in breathing that resulted on attempts to do without it, which supported the contention that a preliminary tracheotomy was advisable.

The history of the second case was rather indefinite. Baby W., sixteen months old, was hurriedly brought from the country to the California Hospital because of great dyspnea. The child was already on the operating table when the writer first saw it. The only history obtained was that the illness dated back fifteen days to a choking spell that occurred while the child was sucking a piece of mutton chop bone.

Foreign body impaction was at once suspected. Immediate tracheotomy was done without any anesthetic. The patient was practically unconscious from the deep cyanosis. On opening the trachea, immediate relief was obtained and the acute pigeon-breast, tumor-like appearance at once disappeared. The end of a piece of bone was felt at the tracheal opening. The bone, rather firmly impacted above in the larynx, was removed by forceps. It was a large, rather thick sliver, about one inch for diphtheria and had antitoxins, had intubation done on two different discharge and cough continued for a few days. Recovery was complete, and the patient was discharged on the sixteenth day.

DISCUSSION.

Dr. John F. Barnhill, Indianapolis: I have seen two similar cases. One in a child that had been treated for about four days. This child had a safety pin just below the larynx, closed end down. Tracheotomy was done with easy removal of the pin. Complete recovery followed.

Another child, thirteen months old, with exactly such a history and in such a condition as the doctor described in his paper. The child was treated, as I remember, by four different physicians, all for croup. One believed the child had asthma. The X-ray showed a safety pin in such a location, which was easily removed by tracheotomy.

Dr. Harmon Smith, New York City: A case comes to mind of a patient six years of age, treated by six different doctors. It was treated for diphtheria and had antitoxins, had intubation done on two different occasions, and was finally sent to me by a prominent nose and throat specialist to remove a papilloma of the larynx. So I prepared, on his diagnosis, for a removal of a papilloma of the larynx. As I was going to remove it I saw the tip end of a safety pin lodged in the anterior commissure, wedged in between the two vocal cords. After its removal there was no further trouble.

Dr. Thomas Halsted, Syracuse: I had a case which was more or less similar to the egg shell case. This child was also treated for diphtheria and had antitoxin for two or three weeks, and then a diagnosis of a probable foreign body was made. That was before the days of bronchoscopy. Tracheotomy was done and three pieces of egg shell were removed; the child recovered.

Since the beginning of bronchoscopy I have operated through the bronchoscope two children, eight months of age, one in which we found a fish bone below the vocal cords, which was removed, and in the other a spicule of glass was found, but which was not removed. We got hold of it, but it slipped the forceps.

As long as fifteen years ago I reported seven cases of foreign bodies in children, all between two and three years of age, all seen and operated within a period of two and one-half years. Recovery of the foreign bodies in these seven cases took place by means of tracheotomy. Six of the children recovered, one dying of pneumonia.

Dr. T. Hubbard, Toledo: I have an X-ray plate which somewhat explains how foreign bodies can get into the larynx of young infants. This is a six-weeks-old baby, with a small, open safety pin. It was located in the posterior commissure, and was working down into the larynx.

There is another case I have in mind, of a fragment of hickory nut shell on the ventricle of the larynx, which by passing in pledgets of gauze and drawing up through the larynx finally released the hickory nut shell.

External Surgery of the Superior Maxilla in Treatment of Nasal Disease.

By John F. Barnhill, M. D., Indianapolis.

The difference in the viewpoint and method of attacking nasal tumors of the nostril and its environment depends to some extent, no doubt, upon the degree of surgical training of each class of operator, and also upon the respective ability of each to accurately locate the origin of the growth. In case the origin is from the ethmoid, turbinates, septum or one of the walls of the nostril, the symptoms of early obstruction will cause the patient to consult the rhinologist, who, either from tradition or belief in its greater efficacy, will almost without exception attack from within. If, however, the growth begins without the nostril, the general surgeon often sees it, usually at a late state, and attacks it by those external methods universally approved by his branch of the profession.

Again, and rather frequently, malignant disease of the upper jaw attacks the alveolar process first, and from the fact that the earliest symptoms are neuralgia referred to the teeth, loosening of the teeth, and swelling of the adjacent alveolus, the patient is first seen by the dentist, who has been known to treat the teeth and even to extract healthy teeth, evidently in the belief that the disease is in some way connected with dental surgery.

A study of reported cases of sarcoma especially demonstrates on the one hand that rhinologists often have cauterized and snared at malignant growths in the nose whose undoubted seat must have been in some distant part of the maxilla, while on the other hand the general surgeon has been guilty of removing the entire upper jaw for a disease that had its origin in the nose or in the party line between the nose and antrum.

While it is probably true that the statistics of the rhinologist are better than the statistics of the general surgeon in the treatment of malignancy of the nose and its environment, these statistics are not entirely fair to external surgical methods. It is conceded by all that the length of time a malignant tumor has progressed prior to the operation has much to do with the end results of most operated cases. It is undoubtedly true that the rhinologist and the dentist see malignancy of the maxillae at an average earlier time than does the general surgeon. Sarcoma or carcinoma develop symptoms of distress much earlier when originating in the nose or alveolus than when the origin is in the antrum. Antrum malignancy may progress many weeks or even months before there is external or nasal swelling and before pressure symptoms cause pain.

A candid view of the facts concerning the surgery of the upper jaw for malignancy is not altogether encouraging. The reasons for this are clear, and some of them have been stated. External surgery of the maxilla is essential, usually more essential, to cure than intranasal surgery. The rhinologist who pretends to do radical intranasal surgery should prepare himself to follow surgical disorders leading from the nose to any part of the upper jaw, if not, indeed, to wherever they may lead. When this is done, and when the diagnosis is made earlier than at present, great improvement of statistics may be expected.

All textbooks undoubtedly lay too much stress on total excision of the maxilla, for the reason, apparently, that it is presumed the disease has always advanced to a point that involves the whole upper jaw, or that any procedure short of total excision is inadequate.

One of the chief objections to the external surgery of the maxilla has been the deforming scars, the misplaced eye, and the palatal defects that result. Early and definite diagnosis as to the seat of the beginning of the growth, and an early studied plan of operation, will very largely avoid this objection. Heretofore the plan of operation has been too much a matter of doing one of two things in any given case—namely, some degree of intranasal surgery by the rhinologist, or complete removal of the jaw by the general surgeon. Earlier opportunity and sufficient thought bestowed on any given case on how best to break away from the traditional plan of total resection will in all probability find a satisfactory modified, yet thorough, operation to fit each condition present.

The writer has seen but four cases of undoubted malignancy whose origin was evidently within the nostril. Three of these cases were sarcoma, one epithelioma. All were operated intranasally, with one recovery—a spindle cell sarcoma of the inferior turbinated body. Two cases later extended to the ethmoid and antrum, were operated externally, one dying within about one year following the external operation, and the other within eighteen months. One case returned in the nasopharynx, and was so rapidly extending that the patient lived but a few weeks after the onset of the nasal ailment.

DISCUSSION.

Dr. Joseph H. Bryan, Washington: I am very much interested in this paper of Dr. Barnhill's, for I am in favor of external surgery in these cases. I had a case operated upon this spring, not a malignant growth, but an exaggerated fibromatous condition. The face was enormously distorted, the eye greatly displaced, and it was clearly impossible to remove it intranasally. I did the Moore operation, and was greatly pleased with the tremendous facility which it afforded for the complete removal of everything within the maxillary antrum, and also the facility with which it aids in removing not only the growth in the antrum, but the complete removal of the whole nasal wall, including the superior middle and inferior turbinate bodies. In this case, unfortunately, the under surface of the wound became infected and broke down. It healed thoroughly, and while the scar is somewhat on the lower border, it was more than a good result under the circumstances. I believe this operation of Moore is by far the best operation—that is, for complete eradication of all these growths which take place within this cavity. This was not a malignant growth, but the same thing would apply to any growth which takes place within that sinus.

Dr. Bryson Delavan, New York City: The reference to the treatment of nasopharyngeal fibroma leads me to say that I stand exactly where I did when I published the articles on that subject. Of course, there are exceptional cases where the growth has advanced far beyond what is usual; where it involves the sinuses to such an extraordinary degree that it is not practical to apply the treatment—the old fashioned at least thirty-year-old method of procedure of removal by electrolysis, which in the case of the less well developed growths has never been improved upon.

I have never heard of a case dying from the plan of treatment to which I referred, and I have not been able to find any in the literature where death has resulted, and the results are far better in every respect.

Hence, I want to again call your attention earnestly to the value of the electrolytic method of removal.

In any attempt to treat such cases with radium, it cannot be brought into communication with the growth. In those cases the best plan suggested has been the opening of the maxillary sinus, and the best avenue of approach seems to be through the roof of the mouth, where complete access can be gained to the maxillary sinus and where the opening can be kept patent. This is a great advantage, in that it enables the application of the radium to be made.

Dr. Hanau W. Loeb, St. Louis: I reported a case a number of years ago in which the tumor was removed by the electric cautery, and in which the hemorrhagic tendency was tremendously reduced by using the electrolysis method.

I may call attention to the ease of going into the nasopharynx by removing the posterior portion of the palate, as I did in a case of carcinoma in the epipharynx, a case not yet reported. The ease with which we were able to remove the mass from the nasopharynx was remarkable.

Dr. D. C. Greene, Jr., Boston: The subject as presented involves the field of rhinology occupied previously by general surgeons, and I would like to say a few words with this point in view.

As Dr. Barnhill has said, the tendency has been for general surgeons, in cases of malignant disease of the upper jaw, to perform a stereotyped operation, usually the classical operation, for removal of the upper jaw. In many cases such an operation removes a great deal of healthy tissue unnecessarily, and, what is worse, fails to reach the limits of the disease. It seems to me that we, as rhinologists, are especially qualified, by reason of our technic in intranasal examination, to carry out more careful observation and removal of the diseased tissue than the general surgeons.

I have been fortunate enough to operate successfully on three cases—and there has been no recurrence in either case—of fairly extensive sarcoma of the nose involving the antrum and ethmoid sinuses, in which a complete exposure of the growth was obtained by means of the Moure incision, so that complete removal of the tumor could be effected in each case. The results have been most satisfactory. One case operated on eight years ago has had no recurrence, another four years ago, and another one a year ago.

My point is that I believe it should be emphasized that we are better qualified to examine and treat these tumors surgically than the general surgeon, because of our general training and technic in intranasal work.

Dr. John F. Barnhill, Indianapolis (closing the discussion): If we can definitely demonstrate that the disease is in the floor of the nose or on the septum, it then seems, judging from statistics, that we are entirely justified in attacking the disease by means of electrocauterization. But if, as may happen, the disease has begun in the nasoantral wall, or has begun in the alveola and spread to the nose, or in the antrum and spread to the nose, or has begun in the ethmoid and spread to the nose, the rhinologist should recognize that fact, and then either send this patient at an early date to a surgeon, or, if he is himself qualified to deal surgically with it, he should do that. It seems to me that the time has come when we should not be guilty of attacking a great subject in a small way, as has been done in nasal surgery of sarcoma.

I emphasized, or tried to do so in my paper, the fact that the general surgeon has not gotten these cases in time to do anything else but make the kind of an operation that he has usually done. We have attacked this disease and worked at the job, as it were, until there was often nothing else to do but to pass it over to the other fellow, and the other fellow often passes it over to the undertaker. There was nothing else to do but to pass it on to the undertaker when it got so far along. But it is possible in nearly every instance, if we use some skill, judgment, care and patience, to make a diagnosis in these cases early enough and operate in time to cure at least many of these patients.

Report of Cases of Bilateral Abductor Paralysis of the Vocal Cords. By Ralph Butler, M. D., Philadelphia.

The first case was eleven years old, and had congenital syphilitic cerebrospinal meningitis, causing ptosis of the right eyelid and internal strabismus. The biceps, triceps, and knee jerks were absent. The pupils were irresponsive to light and accommodation. The laryngeal symptoms, dyspnea and stridor began when he was six years old, but disappeared after three doses of salvarsan, to recur three years later. The second case was a man sixty-two years old with a neoplasm in the upper part of the chest and neck, including the thyroid gland, and causing almost complete occlusion of the trachea. He had been under observation for five months, and improved under mercurial inunctions. The third case was a fatal one following the removal of the thyroid gland.

The cases illustrate the greater danger from a sudden paralysis. The first two cases have been able to go about for many months with relatively little discomfort from obstructions which were little, if any, less than that which was fatal to the third, in which the paralysis was very rapid in its appearance.

Bert believes the greater mortality from sudden obstruction is due to reflex paralysis of the respiratory centers through irritation of the laryngeal nerves, and Krieger maintains that it is due to irritation of the cardiac branches of the vagus.

BOOK REVIEWS.

Asthma. By Dr. Orville Harry Brown, formerly Assistant Professor of Medicine, St. Louis University. C. V. Mosby Company, St. Louis, 1917.

Dr. Brown holds that asthma is due to non-passive expiration as well as to those factors which lead to non-passive expiration and of the conditions resulting therefrom. His views are the fruit of nine years of study of this problem and it may be said that the theory which he has built up is a very rational one and in advance of the various other theories which have been proposed, in many cases unsatisfactorily, to explain this condition.

The essentials of the non-passive expiration theory are as follows: When expiration is made an active process by bringing the abdominal muscles into play to expel the air from the lungs, the momentum of the air will be greatly decreased and the air tension within the alveoli will be greatly increased. This increased pressure is applied to all structures within the chest and will affect all thin structures. The high tension tends to cause the thin walled bronchioles to collapse and thus hinders exhalation. The high alveolar pressure is applied also to the exterior bronchial vein, which tends to produce damming of the blood flow in the bronchial venules and capillaries. Any inflammatory or anaphylactic swelling of the bronchial mucosa, coupled with coughing, sneezing, dyspnea or hard breathing, may result in such marked narrowing of the lumen of the bronchi as to produce expiratory dyspnea, loud piping rales and wheezes, an accumulation of mucus with shreds and bronchial casts, and emphysema. This is asthma. The further important point about this non-passive expiration theory is that the so-called "pre-asthmatic states" can be recognized and successfully treated. In short, according to the author, the treatment of asthma can be placed on a rational and scientific foundation. It must be admitted that so far as other explanations of asthma are concerned, the whole subject, as well as the treatment, is very chaotic. Dr. Brown has gone very exhaustively into the physiology and pathology of respiration and his book is well worth careful perusal by every physician. Ed.

Operative Surgery of the Nose, Throat and Ear for Laryngologists, Otologists and Surgeons. By Dr. Hanau W. Loeb, Professor of Ear, Nose and Throat Diseases in St. Louis University, in collaboration with Dr. Joseph C. Beck, Chicago; Dr. William H. Haskin; New York; Dr. George W. Crile, Cleveland, and others. In two volumes. Vol 2. St. Louis. C. V. Mosby Company, 1917.

The first volume appeared some time ago and dealt mainly with pathology and exploration and plastic surgery of the nose, ear, etc. The second volume is concerned exclusively with operative surgery, as follows: (1) Operative surgery of the nasal cavities (accessory sinuses, septum, turbinates, etc.). Each accessory sinus is dealt with in detail and every operation is fully described in a critical way. (2) Operative surgery of the pharynx. Under this head are considered the operative surgery of the tonsils, adenoids, benign and malignant growths of the pharynx. (3) Endolaryngeal operations with the aid of the laryngoscope. (4) Operations on the external ear and through the canal. (5) Surgery of the mastoid. This chapter is especially worthy of the highest praise, not only for the presentation of the mastoid operation, simple and radical, of the operation for sinus thrombosis, ligation of the internal jugular vein, of the operative surgery of the labyrinth, of the operative surgery of meningitis of aural and nasal origin and of brain abscess of aural and nasal origin, but also for the splendid plates with which these surgical procedures are illustrated. In fact, the whole volume, as is the first volume, is profusely illustrated and the contributors and the publishers are to be highly commended for the splendid work. The fact is, no oto-laryngologist can afford to be without the two volumes as a work of reference.

Ed.

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ORIGINAL COMMUNICATIONS.

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THE FOSSA OF ROSENMUELLER FROM THE RHINOLOGICAL STANDPOINT.*

DR. SIDNEY YANKAUER, New York.

The fossa of Rosenmüller, the triangular corner of the naso-pharynx situated behind the Eustachian eminence, is a region of the body with which we are all familiar. Yet I believe that I am correct in stating, that in the minds of most of us, pathological conditions in this region have always been associated with symptoms referable to the ear, with tinnitis, Eustachian catarrh etc. Nowhere in the recent literature on the subject, have I been able to find any reference to symptoms usually associated with the diseases of the nose. A study of the anatomy and physiology of this region, however, will make it clear that the ear symptoms are very often secondary to disturbances of the functions of the nose, occasioned by pathological changes in this region.

The Eustachian eminence consists mainly of a plate of cartilage, bent like the inverted letter *U*, which projects downward and forward into the naso-pharynx, for a distance of nearly one inch. The mucous membrane which covers the posterior and superior aspects of the cartilage, extends outward nearly its entire length and, at its outermost extremity, becomes attached to the base of the skull. The fossa is, therefore, nearly one inch in depth. The tip of the Eustachian eminence is free in the naso-pharynx and is situated at a distance of 1.8 cm., nearly three-quarters of an inch, from the posterior wall and an equal distance from the vault of the naso-pharynx. The distance between the tips of the two eminences is about 2.5 cm.

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*Read before the Section on Rhinology and Laryngology of the New York Academy of Medicine, May, 1917.

The main respiratory air-channel in the nose lies in the middle meatus, which is on a level with the tip of the Eustachian eminence. When, therefore, the main respiratory air-current reaches the naso-pharynx, it is divided. Part of it passes above the eminence, through the fossa of Rosenmüller and down into the pharynx; part of it passes in front of the eminence, over the soft palate; and the remainder passes into the space between the two eminences. The air-current also changes its direction when it reaches the naso-pharynx, from horizontal, to a downward direction. It is evident, therefore, that any obstruction in the fossa of Rosenmüller, or in the space between them, will interfere seriously with the smooth passage of air from the nose into the throat.

I need only refer to the respiratory obstruction caused by the presence of adenoid masses in the naso-pharynx. The lateral comb of the hypertrophied adenoid mass comes into contact with the tip of the Eustachian eminence and with the edge of the posterior lip. When the adenoid becomes inflamed, the edge of the lateral comb becomes adherent to the eminence. When the lymphoid tissue disappears from the adenoid mass during adolescence, these adhesions remain and bind the mucous membrane of the posterior wall and vault of the naso-pharynx to the Eustachian eminences. When the adenoid is removed during *deep* anesthesia, when the pharyngeal reflexes are absent and when there is no contraction of the pharyngeal musculature to force the adenoid mass through the ring of the adenotome, the instrument pushes aside the Eustachian eminence and, with it, the adherent lateral comb, so that these are apt to be left behind and only the central portion of the adenoid mass is removed.

These adhesions can be easily recognized in the post-nasal mirror. They appear as short, thick, dense adhesions, binding the posterior pharyngeal wall to the tip of the Eustachian eminence and to the posterior lip. Between the adhesions, round or oblong openings mark the entrance to the fossa. They are sometimes so numerous as to present a continuous surface, so that from one Eustachian orifice to the other, the mucous membrane appears to be continuous and there is no sign of the usual deep fossa of Rosenmüller.

Now, the Eustachian eminence is composed of cartilage, which is comparatively unyielding, while the mucous membrane of the posterior wall and of the vault, is only loosely attached to the underlying structures, so that it is not the Eustachian eminence but the mucous membrane, which is displaced. The mucous membrane of the posterior wall and of the vault are brought down to the level of the Eustachian eminence, a distance of nearly three-quarters of an inch. The mucous membrane is sometimes stretched between the two eminences, so that both fossae and the space between them are obstructed. The degree of obstruction caused by this condition, is fully equal to that caused by the original adenoid mass. It happens, in short, that adults complain of nasal obstruction, in whom no obstructive lesion of any kind is found in the nasal passages, or in whom such obstructive lesions as may have been present, have been satisfactorily removed by proper surgical measures. If the naso-pharynx is examined in these patients such adhesions will be found to be present in some of them, and the removal of these adhesions will relieve the obstruction. In young adults, whose tissues have not lost their elasticity, the mucous membrane recedes as soon as the adhesions are severed; and the relief of the obstruction will be immediate and prompt. In older persons, it may be necessary to prevent the reformation of these adhesions, it is desirable to make applications of silver to the cut surfaces, through the direct naso-pharyngeal speculum. Massage can be carried out with the aid of the applicator at the same time. When healing is completed, the appearance of the naso-pharynx is entirely changed. It is deeper and higher than before, and the deep recesses of the fossae of Rosenmüller are distinctly visible.

The presence of secretion in the fossa of Rosenmüller is of interest to the rhinologist as well as to the otologist. For the Eustachian eminence is a wall around the Eustachian orifice and the fossa of Rosenmüller is a gutter surrounding the wall whose combined purpose is to guide the nasal secretions away from the Eustachian orifice. But when the fossa is a deep one, the secretions do not readily escape from it into the lower pharynx. The reason for this will become evident upon consideration of the anatomy of this region.

The pharyngeal wall is composed of three layers—mucous membrane, aponeurosis and constrictor muscle. The upper fibres of the superior constrictor arise from the lower half of the posterior border of the internal pterygoid plate; sometimes accessory bundles arise from the upper part of the pterygoid plate, and even from the base of the skull, at the anterior margin of the middle lacerated foramen. These fibres descend to the level of the tip of the Eustachian eminence, and curving around underneath it, ascend again, and, together with similar fibres from the opposite muscle, are inserted into the basilar process of the occipital bone, near the median line. Above and to the outer side of these fibres, the pharyngeal aponeurosis is not supported by muscle fibres. The aponeurosis, however, extends outward for a considerable distance; in fact, as far as the quadrangular plate of bone which arches over the canal for the carotid artery. The triangular area which is thus left free of muscle fibres is known as the sinus of Morgagni, and corresponds exactly to the space within the naso-pharynx which we call the fossa of Rosenmüller.

Anteriorly the fossa is limited by the salpingo-nasal fold, a fold of mucous membrane which extends upwards from the tubal eminence to the vault. It contains the accessory bundle of muscle fibres belonging to the origin of the superior constrictor, when these are present. This fold does not extend as far inward as the tip of the eminence, and so cannot always be seen by means of reflecting instruments. It can be seen through the direct speculum. It is sometimes so thick that it limits considerably the extent of the fossa of Rosenmüller in the anterior direction, and shuts it off from communication with the posterior nares. When this fold is well developed, the fossa has the shape of a narrow, tubular cavity.

Inferiorly, when the pharynx is at rest, the fossa opens directly into the groove between the posterior lip of the tube and the posterior pharyngeal wall.

During the acts of swallowing, gagging and gargling, the muscles of the pharynx contract, causing the contents of the naso-pharynx to be expressed into the oropharynx, and to appear below the soft palate. When the secretion is a thick and viscid mucus, which does not readily obey the forces of gravity or capillary attraction, this active contraction is necessary to secure drainage. This aid to drainage does not apply, however, to the fossa of Rosenmüller: for the fossa of Rosenmüller is the only part of the naso-pharynx which is not supported by muscular fibres, so that muscular contraction cannot empty the fossa. On the contrary, when the superior constrictor contracts, its upper fibres, which, as described above, form a sling around the tubal eminence, draw the mucous membrane of the posterior wall against the tubal eminence, and close the fossa. When the beak of the direct speculum holds the tubal eminence forward, the contraction of the muscle causes the formation of an oblique ridge of mucous membrane on the posterior pharyngeal wall. The contraction of the salpingo-pharyngeus helps the superior constrictor in closing the fossa below, while the accessory bundles of the constrictor move the salpingo-nasal fold backwards, so that the entrance of the fossa becomes puckered up into a round or oval opening about a quarter of an inch in length. Thus the fossa of Rosenmüller may sometimes become effectually closed up during the contraction of the pharyngeal muscles, and its secretions actively dammed back. If a probe be passed through the opening, it will enter for a distance of nearly an inch, and the fossa, instead of being merely a corner of the naso-pharynx, becomes converted into a large, wide cavity, having the characteristics of an accessory cavity of the naso-pharynx.

The presence of secretion in the fossa of Rosenmüller, is always suggestive of nasal sinus disease. When the secretion is purulent, it is easily seen. But when it consists of strings of clear viscid mucus, pouring down over the tip of the Eustachian eminence in front of the salpingo-nasal fold, it indicates the presence of a catarrhal inflammation of one of the posterior group of accessory sinuses; and, in my experience, it is sufficiently characteristic to warrant operative interference. When the secretion is present behind the salpingo-nasal fold, it cannot be regarded as having the same significance. This is particularly true if there are adhesions present between the posterior lip and the posterior pharyngeal wall, and it is to this class of cases that I wish particularly to call attention.

The presence of these adhesions converts the lower part of the fossa of Rosenmüller into a pocket, in which secretion can accumulate. As the pocket becomes filled up, the secretion overflows and pours down the posterior pharyngeal wall. It occasionally decomposes and gives rise to a foul taste and a foul odor. As the secretion may be forced into the nasal cavity during the act of blowing the nose, all the classical symptoms of chronic sinus disease are reproduced. Yet when the adhesions are cut and the drainage of the fossa restored, all the symptoms disappear. In this connection I may also mention the case of a woman who had complained for a long time of a foul smelling breath and a bad taste. Sinus disease had been eliminated by all the rhinologists who had seen her, and the diagnosis of parosmia of nervous origin was made. When the adhesions which closed the fossae on both sides were severed, a small quantity of secretion was evacuated, whose foul odor was distinctly perceptible. The so-called parosmia was permanently relieved.

The presence of these adhesions converts the fossa of Rosenmüller into a sort of cavity and the symptomatology of such a condition would not be complete without mentioning the possibilities of general systemic infection resulting therefrom. However, the pockets are rarely so completely closed, that the secretion is under pressure and absorption is, therefore, not the rule. Recently, however, I saw a patient who for years has been suffering from chronic rheumatism. Every possible source of focal infection had been carefully eliminated. On one side the fossa of Rosenmüller was completely closed by adhesions, behind which a thick, glairy mucus had accumulated. A culture, made from the tissues removed in cutting these adhesions, showed the presence of the streptococcus viridans in pure culture. The case is of too recent date, however, to be regarded as a proven case of focal infection.

The interior of the fossa of Rosenmüller is not very sensitive to manipulation, but the Eustachian eminence, itself, seems to be well supplied with sensory nerves. Nevertheless, it was somewhat of a surprise to me, to meet with a case in which a reflex cough had its origin in this region. The case was that of a young lady who stated that about five years previously, her adenoids had been removed because of nasal obstruction. She declared that the obstruction was not completely relieved by the operation and that ever since that time she had been suffering from a dry hacking cough without expectoration. She had been treated by numerous specialists during this time, including myself, without relief. When the adhesions which bound the posterior wall of the naso-pharynx to the posterior lip of both tubes were cut, not only was the breathing improved but the cough ceased at once. Perhaps this case is unique, but the thought occurs that if one kind of reflex neurosis may have its origin in this region, it is not impossible that other cases may be found in which nasal or laryngeal reflex neuroses originate in the same place.

It is without doubt true that not all persons in whom pathological changes in the fossa of Rosenmüller are found, necessarily suffer from all or even from any of the above group of symptoms. But the fact that there are patients who complain of rhinological or laryngological symptoms without ear symptoms, in whom the only pathological lesions that can be found are those in the fossa of

Rosenmüller, who can not be relieved until the drainage of the fossa is restored, is the burden of this communication.

To conclude, then, diseased conditions of the fossa of Rosenmüller may give rise to:

1st. A degree of nasal obstruction equally as great as that caused by hypertrophied adenoids; and persistent nasal obstruction after the removal of large masses of adenoids may be explained thereby.

2nd. Secretion pouring over the tip of the Eustachian eminence, when in front of the salpingo-nasal fold is indicative of disease in the posterior group of nasal accessory sinuses. Secretion in the fossa of Rosenmüller behind the salpingo-nasal fold, particularly when associated with adhesions in this region, may cause a clinical picture closely resembling disease of the accessory sinuses even though the latter are entirely free from pathological changes.

3rd. It is not impossible that a fossa whose drainage is obstructed may be the focus of a general systemic infection.

4th. Reflex nasal and laryngeal neuroses may have their origin in this region.

616 Madison Avenue.

Throat Lesions in Leprosy. J. A. Honeij, *New Orleans Med. and Surg. Jour.*, July, 1917.

The oral cavity is early affected. In none of the cases, even in those with signs barely diagnostic of leprosy, has the palate failed to show some inflammation and ulceration, usually situated on the sides of the raphe line, close to the uvula. In some of the healed cases there has been total destruction of the pillars and contiguous structures, giving a smooth, cave-like appearance to the throat. The tongue in some cases showed marked hypertrophy of the raphe and papillae, with an increased depression of the groove. There is little, if any, change in the gums or teeth.

The laryngeal structures (cartilage, mucous and submucous tissues) are attacked in most cases. Of three cases coming to autopsy, the trachea was attacked in two cases in its upper third. The lungs were not affected in either of the three cases.

Inflammation and destruction of the tissues of the nose is well known. Loss of smell occurred in only one case. Ed.

NASAL SEPTUM DEFORMITY IN CHILDREN. A STUDY OF 314 CHILDREN.

Dr. Louis G. Kaempfer, New York.

At the present time it would seem that an apology is almost necessary for any publication dealing with deformities of the nasal septum. However, much that has been written, concerning the cause of deviation of the nasal septum and the operations and modifications of operations that have been devised for its correction, there has been very little attention paid to its occurrence in children.

Zuckerkandl, in discussing the causes of septal deviation said, that it did not occur before the seventh year, that is, before the developments of the jaw with the second dentition. Later he modified his statement in so much as to say that he had found, in the examination of 35 skulls of children between four and six years of age, one with a well developed deviation and a spur. He also quotes Wetschler as having observed deviations in children of four and five.

Zuckerkandl contends that abnormal development of the bones of the face, at the time of the second dentition, has an etiological bearing. This can possibly be accounted for by the fact that the upper jaw in civilized man is much smaller than in his forebears. The high or gothic type of palate, usual in infancy, persists oftener and there is not room for the larger teeth of the second dentition. The result is a crowding upward of the vomer and a buckling of the thin bony and cartilaginous partition. In reality the jaw does not expand sufficiently for the palate to flatten out and leave room for the septum to develop downward. There are some facts which seem to bear out this hypothesis. Septal deviation is more common among Europeans than in the less civilized races—savages and negroes. On the other hand, in children presenting themselves to the dental surgeons with malocclusion of the teeth, usually individuals with extreme under-development of the jaws, the septum is almost always deviated.

Trauma plays a much less important part in the etiology of deviated septum than is thought by some. In some instances after fracture of the septum, there is seen extreme deviation of the cartilage without any spur formation whatever. In other cases there is only slight deviation of the cartilage with the development of large spurs. These bizarre findings can be explained only on the ground that there are in some individuals who give histories of fracture, deviations prior to the injury.

In reference to trauma as a cause of septal deviation, an attempt was made in the cases here reported from the clinic, to elicit information on this point. In only one case, where there was a distinct deviation, did the mother admit that the child had injured his nose. This was in the seven-year-old boy, the oldest of the series. Of course, this is very inconclusive evidence, as the class of patients among whom these observations were made is not in a position to have constant supervision over its children and only the grosser accidents are noticed and remembered and in all probability only a proportion of those. It does not, therefore, preclude the occurence of those minor injuries to the nose, which may, according to Bosworth, set up a low grade of chronic inflammation, resulting finally as he claims, in a true deviation with or without a wide crest or spur.

It has been held that the chronic rhinitis, with its more or less frequent acute exacerbations, that accompanies the presence of large adenoid vegetations in the nasopharynx may have an etiological bearing on the development of deviated septa. Others, notably Talbot, maintain that deviation of the septum is part of a general underdevelopment, on a basis of degeneracy, and that the underdevelopment of the superior maxilla, the deviation of the septum, the high-arched palate and the presence of hypertrophied adenoid vegetations and the enlarged tonsils, found in many of these individuals, are all manifestations of the same sub-normal tendencies. Robert, cited by Gradenigo, believes that the presence of large adenoid vegetations, causing mouth breathing, tends to an underdevelopment of the nasal cavity as a whole—an atrophy of disuse.

Yankauer says that all deviations of the septum are variations of one form. The highest point or apex of the deviation is at a point which corresponds to the meeting place of the sutures between the cartilage, the anterior nasal spine, the perpendicular plate of the ethmoid and the vomer. From this apex the septum slopes down anteriorly, posteriorly, superiorly and inferiorly. The different types of deviation that have been described are merely variations in the angles and extent of these slopes. From these observations he advances the theory that the suture lines play the same role in the development of the nose that the epiphyseal lines do in the development of the long bones. The nose being usually narrower on one side the inspired air will impinge more sharply on the septum on that side and, acting as an irritant cause, a congestion and increased blood supply and consequently an ever-increasing thickening and development of bone on that side.

The bones of the septum are, however, laid with separate centres of ossification for the different bones. The centres are at points away from this meeting place of the sutures and the bone is laid down from the centres toward the edges of the bone. The parts adjacent to the sutures are the last to become ossified and the whole septum is bent toward that point because it is the last to remain soft and susceptible to the considerable negative pressure exerted by the air as it is inspired through the narrower side of the nose. This accounts for the slopes falling away from the common meeting point of the sutures.

In the children that form the basis for these observations it was noticed that many had slight thickening of one side of the septum or the other. It is quite probable that later these thickenings might develop into true deviations. That is, the tendency for one side of the nose to be narrower than the other would make the wide side the one through which the greater volume of air was inspired and thus tend to accentuate the deviation. These cases were not classified as deviations. Only in those children where there was a definite deviation with or without a spur was it put into that category. Spurs were noted in several instances and in some children hypertrophy of the lower and middle turbinate bones was observed.

There were two groups of children examined. The larger group of two hundred and twenty children was seen in the out-patient departments of Mount Sinai Hospital; the remaining ninety-four children were inmates of one of our institutions. The groups are kept separate because the findings were a little different and the question of environment as a factor in the development of these nasal deformities was brought to mind.

Of the children seen in the Mount Sinai Dispensary some came into the pediatric department but the majority were brought directly to the ear, nose and throat clinic for some throat or ear trouble. This may account, in part, at any rate, for the large number of hypertrophied tonsils observed. Many of the children came for acute or chronic otitis, though no record was made of this fact. Some came because they had enlarged tonsils and adenoids and a few were perfectly well, having been brought with other children that were ill.

In this group two hundred and twenty children were examined. While this is scarcely a large enough number from which to draw definite conclusions, still it can, in a general way, point out the conditions, barring very unusual ones that would ordinarily be met. Records were kept of the age and sex of the children, of the condition of the septum, of the turbinates, of the palate and of the condition of the tonsils. The number of teeth was noted and a record was kept of the birth-place of the parents. Practically all of the children were born in the United States.

The youngest child in this series was five weeks old, the oldest, seven years. The majority of the children ranged in age from two months to four years. There were ninety-nine children in the first year of life. Forty-two under six months and fifty-seven between six and twelve months old. Between one and two years of age there were fifty-seven children, between two and three there were thirty-eight. Twenty children were between three and four years old. From the fourth to the fifth year there were four children and one each in their sixth and seventh years.

The sexes were about equally divided, there being one hundred and fourteen boys and one hundred and six girls.

In the examination of the septum a distinction was made between deviation and, what for want of a better term was called "thickening." These were really very slight deviations and in this group were included those septa that appeared to encroach, to a greater or less degree, on one side or the other, while on the opposite side they were straight or almost straight. In these noses the width of the common meatus was reduced on one side, that of the encroachment, but was not unduly large on the other. In those cases included in the category "deviation" there was a true deviation of the septum with, in some cases a distinct spur formation.

There were one hundred and eight children who showed deformities of the septum. Of these, sixty-five were classed as thickening and forty-three as deviation. This gave an incidence of over forty-nine per cent (49%) of septal deformities, twenty per cent (20%) of frank deviation and almost thirty per cent (30%) that showed a tendency toward the later development of deviations. Excluding those children over four, of whom there were only six examined, the results were not much different. Out of two hundred and fourteen in the first four years of life, one hundred and five were found to have deformities of the septum or forty-nine per cent (49%) of which forty or about eighteen per cent (18%)

were true deviations and sixty-five or thirty per cent (30%) had thickened septa.

Analyzing these in groups according to age, there were, out of the ninety-nine children one-year-old and under, thirty-two or about thirty-two per cent (32%) who had already developed noticeable abnormalities of the septum. Eight of these were true deviations; one of them in a seven-months-old boy, having a well developed spur and another, a boy of four months having a superior deviation.

In the children examined, who were six months old or younger, four deviations were found and five thickened septa. The youngest child to show any abnormality was eleven weeks old. This child had a fairly well marked thickening to the left. The youngest child seen with a deviation was three months old.

It might be suggested that deviations or abnormalities of the nose in children as young as these were congenital. Our observations in these cases disprove this. In the further examination of the children it was found that the proportion of deviations and thickenings of the septum increased as the children grew older. It would seem, then, more reasonable to suppose that the cause of these abnormalities, whatever it may be, is one that begins to operate very soon after birth, perhaps even before, and already shows its results in the early years of life. All of these children were seen in the out-patient department of the hospital and were for the greater part from crowded tenement districts of the city, living usually in poorly ventilated and often in over-crowded quarters. While this is not offered as the explanation for their deformities, it undoubtedly has an etiological significance. Whether the same proportion of deflections would be seen in children living under better conditions is questionable. The other series of children examined while only limited in number and drawn from children that were originally situated, much the same as these show a slightly smaller proportion of deformities.

During the second six months four deviations and nineteen thickened septa were observed. This is a proportion of nine per cent (9%) of deviations and eleven per cent (11%) of thickenings for the first half year of life and seven per cent (7%) of deviations and thirty-three and a third per cent (33⅓%) of thickenings for the second half year.

In children from one to two years of age, there were eight deviations and twenty-six in whom the septum was thickened out of a total of fifty-seven children, making fourteen per cent (14%) of deviations and forty-five per cent (45%) of thickenings or sixty per cent (60%) of septal abnormalities.

During the next year, from two to three there were, out of thirty-eight children, thirteen or thirty-four per cent (34%) with deviations and twelve or thirty-two per cent (32%) with thickening of the septum, a total of sixty-five per cent (65%) of abnormalities.

Between three and four years of age there were eleven deviations and three thickened septa, out of twenty children examined, making fifty-five per cent (55%) of deviations and fifteen per cent (15%) of thickenings or seventy per cent (70%) of abnormalities.

It is noticeable that the proportion of true deviation increases from eight per cent (8%) in the first year to fifty-five per cent (55%) in the fourth and that the thickened septa, which are twenty-five per cent (25%) in the first year and forty-five per cent (45%) in the second, fall to thirty-two per cent (32%) in the third and fifteen per cent (15%) in the fourth. This is, in all likelihood, due to the fact that many of those septa, which in the first two years of life show a tendency to become deviated, have already progressed to a frank deviation by the time that the child has reached his fourth year.

In contra-distinction to the large numbers of departures from the normal in the septa of the children in this series, there were few in whom abnormal turbinates could be found. In the two hundred and twenty children there were twelve in whom hypertrophy of the lower turbinate was noted. One of these was in a five-year-old and another in the seven-year-old boy. Deducting these two, there were in the two hundred and fourteen children under four years of age ten in whom there were enlarged lower turbinates or less than five per cent (5%). These were distributed as follows: one each in the first and second years, four in the third year and four in the fourth. The youngest child, in whom hypertrophy of the lower turbinate was noted, was eight months old.

Hypertrophy of the middle turbinate was observed ten times or a little over four per cent (4%). There were two children under one year of age with enlarged middle turbinates, one seven and one eight months old. There was one child in its second year and five between two and three. The remaining two were in their fourth year.

In all but one of these children the enlargement of the turbinates was associated with thickening or deviation of the septum.

Of the twelve hypertrophid lower turbinates there were nine that had deviated septa and two in whom the septum was thickened. There was one child, a girl of four, with a well-marked hypertrophy of the lower turbinate and a perfectly straight septum. Eight of the children with hypertrophied middle turbinates had deviated septa, while thickening was observed in the remaining two. These might be considered as examples of what Zuckerkandl describes as the "compensatory" form of septum deviation. Baumgarten advances the theory that the hypertrophy of the lower turbinate causes the septum to be pushed to the opposite side. Zuckerkandl does not agree with this contention on the ground that the turbinate never grows beyond the mid-line and that further, the greatest deviation is not at the same point as the greatest hypertrophy of the turbinate. He believes, however, that there may be some connection between hypertrophy of the middle turbinate and deviation of the septum. Neither of these theories seem to be substantiated by an examination of this series of children. Out of one hundred and eight septal deformities there were but twenty-two with involvement of the turbinates, a number entirely too small if the hypertrophy of either the lower or the middle turbinates was a factor in the causation of septal deflection. It is much moe likely that where the deformity of the septum is associated with changes in the turbinates that the latter are an effect rather than a cause of the deviation, or, perhaps, simply a part of the general mal-development that has the deviation as one of its results.

Almost every one of these children had high-arched palates, the type normal in infancy. In certain instances it persists into adult life and often these individuals have faulty occlusion or irregular implantation of the teeth. An attempt has been made by some writers (Trendelenberg and Freeman), to give the persistence of this type of palate an etiological relationship to septal deviation. Ballenger quotes Freeman, who found in three hundred and two individuals with high-arched palates, two hundred and ninety or ninety-six per cent (96%) with deviation of the septum. Others consider that the persistence of the high palate and the presence of the deviation are part of the same condition—an under-development of the upper jaw.

In the examination of these children the palates were classed as "high" and "low." By high palate was meant the usual type of infant palate with a "V"-shaped arch. Those that more nearly approached the adult palate in appearance, were classed as low. Of this kind there were twenty-five or a little over eleven per cent. (11%).

Of the children with low palates, twelve had thickened septa and one had a deviation, so that if any significance is to be attached to a relationship between the shape of the palate and deviation of the septum, it is not that of cause and effect.

One of the most interesting points in the study of this group of children was the question of relationship, if any, between the deformed septa and hypertrophied tonsils. It would appear at first glance, that an unusually large number of these children were possessed of hypertrophied tonsils. It must be remembered that most of them were examined in the laryngological clinic, either because of their enlarged tonsils or for some other condition of the throat or ear of which hypertrophied tonsils are an accompanying part. The environment of the children, which is one to foster and aggravate catarrhal conditions of the upper air passages, may also furnish a reason for the large number so afflicted.

The cases fall naturally into four groups, those with simple hypertrophy of the tonsils, those where the tonsils are enlarged but buried beneath the pillars in the lateral pharyngeal wall, those with small tonsils and those whose tonsils have already been removed. In the latter group the presumption is fair that the tonsils were enlarged or diseased. In the first two groups the indications were for the removal of the tonsils. In the third group they were perfectly normal and no indication for their removal existed. Whether the removal of the tonsils and adenoids in those children whose septa are thickened would, by clearing up the accompanying chronic rhinitis, have a deterrent effect on the progress of the slight deformity of the septum, into a patent deviation, is something that cannot be foretold but it would seem, from an examination of the figures quoted above, that the increase of deviations and the decreases of slight septal deformities, through the same period, in the same group of individuals, shows that the chronic rhinitis has a bearing on the causation of the deviations and that the removal of the tonsils by lessening the incidence of chronic catarrhal rhinitis or by mitigating the severity of the process, once it is established, would save a number of these children from future septal deviations.

Thirteen children of the two hundred and twenty had their tonsils removed. In twenty-seven of the children the tonsils were normal in appearance, small, and there was no reason for their removal. Of the remaining one hundred and eighty children, one hundred and twenty-eight had simple hypertrophy of the tonsils, while in fifty-two the tonsils were both hypertrophied and buried. Eighty-two per cent (82%) of all the children had tonsils that were enlarged.

There were one hundred and eight children with septal deformity and one hundred and twelve without. Of the first group, ninety-three or eighty-five per cent (85%) had hypertrophied tonsils. Eight children, who had had their tonsils removed, had septal deformities of some degree. It is fair to assume that their tonsils were not normal. Added to the above figure we get one hundred and one children of one hundred and eight with enlarged tonsils, an incidence of ninety-three per cent (93%). Of the second group, children free from septal deformity, there were eighty-seven or seventy-seven per cent (77%) with hypertrophied tonsils. Looking at it from the other standpoint, that of hypertrophied tonsils, we find, again, ninety-three out of one hundred and eighty or almost fifty-two per cent (52%) with septal deformity against five out of twenty-seven or eighteen per cent (18%) in the group with small tonsils, as having deformity of the septum. These latter figures are, of course, entirely too small to form the basis of any definite conclusion and are simply given as they occur in this series. Still, taken together with the other observations, they would seem to show that there is more tendency for these two conditions to occur together than separately and that apparently there is a common etiological factor for them. This would seem to be the chronic rhinitis incident upon the slight narrowing of one side of the nose and the increase of the deformity by the vicious circle thus started.

The mechanism of the vicious circle begins with a nose, one side of which is narrower than the other. A certain degree of chronic rhinitis having been established there is a tendency for the overgrowth of the adenoid vegetations and the tonsils and also for an increase in the deformity of the septum that was the original cause of the rhinitis. These conditions, in their turn, tend to foster the rhinitis. The removal of any one of the factors lessens the rhinitis and thus benefits the patient by the absence of an aggravating element to the vicious process. The removal of the tonsils therefore, as stated above, would have a beneficial effect upon the nasal condition, aside from any other indication for their removal.

A record was kept of the nationality of the children to determine, if possible, whether or not there were any racial characteristics that would explain any of the observations that were made. The preponderance of children of Russian and Austrian Jewish parentage was so great that there were too few representatives of other racial groups to enable any observations on that score to be made. There were one hundred and sixteen children of Russian forebears and forty-one with Austrian parents. These people are of the same race and have about the same characteristics. The remaining sixty-three were made up of twenty Italians, six whose parents were born in Ireland, two Jewish Turks, three negroes from the British West Indies and thirty-two whose parents were native born. Those with American parents were about equally divided between Irish and Russian descent.

The deformities were so evenly distributed between the children of the different strains that it can safely be said that, given the same environment, no racial propensities can be noticed.

To see whether children living in a different environment would show different results, ninety-four inmates of one of our large homes were examined. They ranged in age from six months to five years. They live under excellent surroundings, spend a large part of their time out of doors, sleep in spacious well-ventilated rooms and are guarded against the errors in diet, familiar to anyone who has worked among children, such as constituted our first series.

In this group there were thirty-eight septa that departed from the normal—forty and one-half per cent 40.5%) ; twenty-four or twenty-five and a half per cent (25.5%) were thickened and fourteen or fifteen per cent (15%) were true deviations.

Only one child had large turbinates.

Seventy-one children, seventy-five and a half per cent (75.5%) had enlarged tonsils. Of these, thirty-one were simple hypertrophies and forty both hypertrophied and buried. The remaining twenty-three children had small tonsils. None of these children had had their tonsils removed.

Comparing the findings in the two groups of children, one notices a smaller percentage of nasal deformities, both thickening and true deviation as well as a smaller percentage of enlarged tonsils. Inasmuch as these children are for the most part of the same parentage and were, most of them, born under the same surroundings as the dispensary children and lived in the same environment until their admission to the home, it is fair to suppose that any advantages that can be found in the institution group must be ascribed to their changed and improved surroundings.

The large number of septal deformities found, is rather surprising—more than was expected when the examinations were first undertaken. Significant facts are the tendency for the deformities to occur, together with enlarged tonsils and the decrease of thickened septa and increase of patent deviations as the children become older. Taken together with the rhinitis found in so many of these children, the septal deformity, as stated above, would seem an additional indication, aside from any others, for the removal of even slightly enlarged tonsils.

NASAL DEFORMITY IN 220 CHILDREN FROM THE DISPENSARY.

		Septum			
Age	No.	Thick.	Dev.	L. T.	M. T.
0— 6 mos	42	5	4	....	....
6—12 "	57	19	4	1	2
1— 2 yrs	57	26	8	1	1
2— 3 "	38	12	13	4	5
3— 4 "	20	3	11	4	2
4— 5 "	4	....	2	....	....
5— 6 "	1	....	....	1	....
6— 7 "	1	....	1	1	....
Total	220	65	43	12	10

THE RELATION BETWEEN HYPERTROPHIED TONSILS AND SEPTAL DEFORMITIES.

Hypertrophied Tonsils	93	Hypertrophied Tonsils	87
Septal Deformities	108	Children without Septal Deformities	112
Per cent of S. D. with H. T.	85%	Per cent of children without S. D. with H. T.	77%

Septal Deformities	93	Septal Deformities	5
Hypertrophied Tonsils	180	Small Tonsils	27
Per Cent of H. T. with S. D.	52%	Per cent Small Tonsils with Septal Deformities	18%

COMPARISON OF INSTITUTION AND DISPENSARY CHILDREN.

	Sept. Deform.		Thickening		Deviation		Hyp. Tonsils	
Institution	38	40.5%	24	25.5%	14	15%	71	75.5%
Dispensary	108	49 %	65	30 %	43	20%	180	82 %

616 Madison Avenue.

A METHOD OF MEDICATING EUSTACHIAN BOUGIES.*

DR. LEE M. HURD, New York City.

The Eustachian bougie has been advantageously used for over thirty years to dilate tubal stenosis and stimulate the lining membrane.

Feeling the necessity of medicating the tube at the time of bouginage, several methods have been advanced.

First. Dipping the bougie in an aqueous solution of silver or iodine.

The disadvantage of this method is that the medicament does not stick to the bougie, being rubbed off either in the catheter or at the mouth of the tube.

Second. Coating the bougie with a heavy base, such as lanolin. This, again, is as easily rubbed off as the aqueous solutions.

Third. The use of a wire bougie, such as a Holmes or a Yankauer, wrapped with cotton.

This is a much better method, but with the disadvantage that a considerable portion of the solution, into which the bougie has been dipped, is squeezed out as the bougie advances into the tube, as well as the difficulty of properly adjusting the cotton on the bougie to the size required for the particular tube in question.

The simple method, which I have used for fifteen years, has the advantage of placing the drug used where you want it and on the exact size of bougie you wish in the particular case.

Celluloid bougies are used, which are coated with silver nitrate, using gum acacia as a base.

Method of preparation. In a narrow test tube, make a saturated solution of gum acacia in a water bath, then add the silver nitrate solution, making the solution from 1 per cent to 10 per cent strength of silver as desired.

The bougie is dipped about one and one-half inches into this solution, and when the bougie has a uniform coating, it is placed to dry; then I usually give the bougie a second coating. When dry, the gum acacia and silver coating looks and feels like varnish to the dry fingers.

The silvered bougies can be made up in quantities, and when kept dry, will last fairly well for a week or more.

The one disadvantage of using bougies several days old is, however, that the silver nitrate will gradually oxidize, so that the coated bougies, a week or more old, may have lost half of their silver nitrate per cent.

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*Read before the American Laryngological, Rhinological and Otological Society, at Atlantic City, N. J., June 1, 1917.

I generally use them the second or third day after preparing them.

Method of introduction. A plain gum elastic or celluloid bougie, of the proper size, is passed through the tube to make sure of the position of the catheter and the size of the bougie the tube will admit and also to dilate the tube, then the plain bougie is withdrawn, and the coated bougie can be readily passed as far as desired and remain there about two minutes to allow the moisture of the membrane to dissolve the gum and deposit the silver where desired, knowing that a definite per cent of the silver nitrate has been deposited.

When the bougie is withdrawn, the gum coating will be entirely gone or only a little stickiness will be felt.

The pathology of the tubal mucosa is practically the same as that of the nasal pharyngeal mucosa, acute congestion, chronic hyperplasia, chronic hypertrophy, etc.

The vast majority of tubal stenosis will readily yield to the use of the unmedicated bougie, but some cases of hyperplasia and hypertrophy relapse to their former condition, and the plain bougie fails; then the bougie varnished with gum acacia and silver nitrate will reduce the swelling.

Results. One or four per cent is usually strong enough to contract the membrane; if not, the strength can be increased up to ten per cent.

The stronger percentages should be used cautiously if it is necessary to pass the coated bougie beyond the isthmus, as several times, I have produced a serous exudate which drained into the tympanum, producing tinnitis and diminishing the hearing for several days.

I have never had pus form in the middle ear, nor had to incise the drum membrane for relief of the exudate.

The weaker silver nitrate percentages produce no discomfort, but sometimes the stronger percentages will give annoyance and cause some pain, referred to the ear, similar to the discomfort produced in the nose by 10 per cent silver nitrate.

Ultimate results, naturally, vary. Some tubes remain perfectly patent, while others relapse after a time, and require a repetition of the treatment.

15 East Forty-eighth Street.

SALIVARY CALCULUS; REPORT OF A CASE.*

Dr. William Wesley Carter, New York City.

Since salivary calculi of sufficient size to require removal by surgical means are comparatively rare and as this report is a personal experience, I feel that the subject may be of sufficient interest to bring before you to-night.

About two years ago I was seized with a sudden stinging pain on the right side of my tongue; the floor of the mouth on this side became swollen, the swelling increasing very rapidly on taking food, and subsiding a short time after the meal. With the aid of a mirror I soon discovered a small calculus obstructing the mouth of Wharton's duct. I cocainized this area, and with a small bistoury removed a stone about the size of a mustard seed. My symptoms disappeared and I had no further disturbance of this nature until Feb. 22, 1917, when I suddenly had a very severe pain under the angle of my right jaw. The pain was burning in character and radiated towards the tip of the tongue. The submaxillary gland on that side began to swell rapidly and was exquisitely tender. On attempting to eat, the pain became almost unbearable and the swelling beneath the jaw increased remarkably, extending down into the neck. I recognized at once that a salivary calculus had obstructed the duct, probably very close to the gland. By di-digital palpation I could distinctly feel the calculus below and about opposite the last molar tooth. I immediately asked Dr. Caldwell to make an x-ray plate of the affected area. In the plate are shown very distinctly a large pear-shaped calculus and just below it two smaller calculi. On Feb. 25, under local anesthesia, Dr. A. J. Brown removed the stones through an incision in the floor of the mouth. The largest of these stones is about the size of a cherry pit, the small ones are about the size of mustard seeds.

Owing to the restricted space in which one has to work, and the necessity for avoiding the important vessels and nerves which are in close proximity to the duct at its origin from the gland (as shown in the diagram), and owing to the extreme mobility of the tissues in the floor of the mouth and the difficulty in controlling the movements of the tongue, the removal of a stone from this locality is a difficult operation and one requiring a high degree of skill on the part of the operator and a great amount of patience and forbearance on the part of the patient.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 28, 1917.

Operation through the floor of the mouth is advisable in all cases unless there is an external fistula or an abscess of the gland, in which case an external operation will probably be required. If the calculus is lodged near the mouth of the duct, it may be possible to remove it by dilating the canal. If in the course of the duct, however, it is best to make a longitudinal incision over the stone and remove it through the slit. Some authors speak of probing the duct and dilating it, but I am quite sure that those of you who have tried to probe Wharton's duct will agree with me that it is a difficult, very often impossible thing to do.

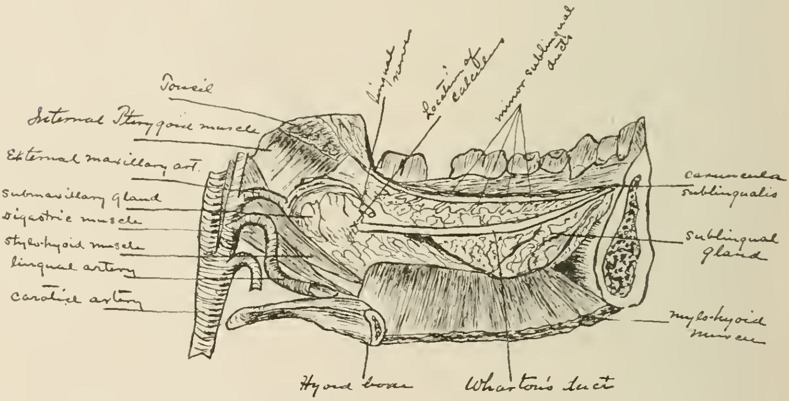

Fig. 1. Relations of Wharton's duct to surrounding structures.

When the stone is located in the gland itself, or at the beginning of the duct, as in my case, the proper procedure is to administer hypodermically ¼ gr. morphine and 1/150 gr. atrophine. Then cocainize thoroughly the affected area superficially and deeply. Have the patient lie on the affected side and protrude the tongue to the opposite side of the mouth. Carefully locate the stone by bidigital palpation, then have the patient push the gland forward and upward, by placing his thumb under the angle of the jaw. This not only brings the stone within reach of the operator, but it stabilizes the very mobile tissues of this region and makes the operation much easier and safer. The tissues immediately over the duct are fixed by means of a pair of forceps and an incision is made down to the stone, which is then grasped with forceps and removed. In making the incision, which is quite deep, care must be taken not to injure the lingual nerve, the maxillary artery, or the facial artery; all these lie in close proximity to the gland at this point.

The wound should be left open and should be frequently irrigated with an antiseptic solution, as infection in this locality is to be avoided if possible.

The wound in the duct, as in my case, usually closes without an internal fistula, the latter would be of little consequence even if it did occur.

After apparently almost immediate recovery from the operation, there occurred in my case an unexpected complication, and one which I have not seen mentioned in the literature: On the third day after the operation the opposite submaxillary and both of the sublinguals became sympathetically involved, and for four or five days I was completely incapacitated, being unable to take any solid food whatever. The parotids did not participate in this salivary riot.

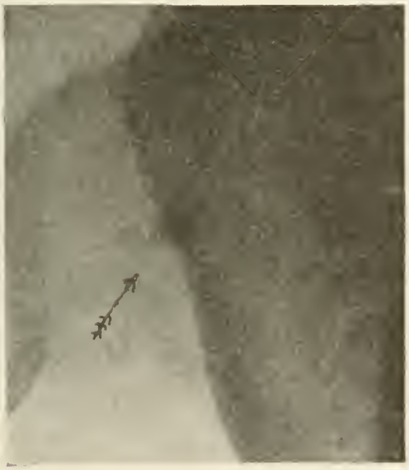

Fig. 2. Radiogram of Salivary Calculus.

At present, recovery from the attack seems to be complete.

Sixty per cent of salivary calculi are said to be found in the submaxillary gland, twenty per cent in the parotid and twenty per cent in the sublinguals. The stones are usually found in Wharton's duct. In this location they are generally round or cylindrical. When found in the gland they are usually larger, irregular in shape and are apt to be multiple.

Salivary calculi are composed of both organic and inorganic matter. The organic matter consists chiefly of bacteria and epithelial debris. The inorganic matter consists of the salts found in the saliva—the phosphates and carbonates of calcium, potassium and magnesium.

Calculi, according to various authors, occur from two to five times more frequently in males than in females. They are usually met with in middle life, and very rarely occur in children.

The following have been mentioned as predisposing factors in the formation of salivary calculi: (1) General or local conditions, causing a change in the character of the secretion. (2) The entrance of foreign bodies into the ducts, these serving as a nidus for the formation of the calculus. (3) A local inflammatory process, a clump of bacteria serving as a nidus around which is deposited in lamina the salts of the saliva.

The latter theory I am inclined to accept, for in practically all calculi that have been examined have been found clumps of bacteria; this would seem to point to an inflammatory origin.

The prompt removal of calculi, especially if they are located in the gland, should be urged, not only on account of the pain connected with the presence of the stone, but because of the liability to abscess formation which may result in cellulitis, a condition always to be dreaded in this locality.

69 West Fiftieth Street.

Typhoid Meningitis. S. Bayne-Jones, *American Jour. Med. Sciences,* July, 1917.

The report describes a case of purulent cerebrospinal meningitis due to bacillus typhosus, occurring in the fourth week of a typical case of typhoid fever. The outcome was fatal within a few days after the onset of the meningitis. Lumbar puncture done during the convulsions gave a turbid greenish-yellow fluid under pressure of more than 200 mm. of water. The cells formed a pavement of pus when spread on a microscopic slide. In stains for bacteria no organisms of any sort were discoverable. Cultures of the spinal fluid yielded bacillus typhosus alone, which gave the typical cultural reactions of the typhoid bacillus and was agglutinated by a dilution of 1 to 3200 of the serum of a rabbit immunized with the laboratory's strain of B. typhosus. Ed.

STENOSIS OF THE NASO-PHARYNX OPERATION WITH PROSTHESIS.*

DR. HARRY E. ISAACS, New York City.

The case, which by the courtesy of this section it is my privilege to show, has many points of interest in its history and course. The adaptation of surgery and a prosthetic appliance in the field of your specialty, are the reasons for its presentation. The history will be given chronologically and the description of the symptomatology is based on a statement written by the patient, an intelligent trained nurse, 25 years of age.

Previous to August, 1914, there is nothing of interest in the anamnesis and then, perhaps, as a coincidence, a tonsillectomy was performed by an expert, the chief of staff in the institution in which she received her training. No reason is given for its performance beyond that the patient thought she would like to have her tonsils removed. Nothing but an indefinite annoyance and irritability of the throat followed, until about seven months later when a painless swelling, the size of an egg, rapidly developed in the left submaxillary region. In two weeks this mass became painful and a febrile reaction between 100° and 101° set in. A diagnosis of tuberculous cervical adenitis was made and an operation was performed on February 23, 1915. A large solitary gland was removed through a three-inch incision along the left sterno-cleido-mastoid edge. Section of the gland was reported by the pathologist as being tuberculous. The wound healed *per primam* but redness persisted and the scar became keloidal, for which X-ray therapy was tried for several weeks without apparent effect.

After the excision of the gland, the throat became painful, swallowing difficult and attended by pain. Sense of taste was lost, Tinnitus developed and increasing with the severity of pain, interfered with sleep. The quality of the voice changed, becoming thick, "nasal" and hard to understand. Breathing through the nose became impossible.

On October 15, 1915, the rhinologist who had removed the tonsils, examined the patient and made a diagnosis of nasal polyp and adhesions of the naso-pharynx; these adhesions were separated digitally but the pain persisted and a thick mucinous discharge from the throat developed. The pain increased gradually until, as the patient expressed it, "all the facial bones were involved, which caused frequent fainting spells, and, uncontrolled by hypnotics or opiates, interfered with sleep." From the time of excision of the gland, up to this point, loss of weight had been progressive (118 to 94 pounds), and on February 10, 1916, the patient found it necessary to abandon work. She then consulted Dr. J. W. Weinstein, who examined her throat and found a stenosis of naso-pharynx with complete occlusion of the choana, with a minute opening on the left side of the throat which he accordingly dilated. The patient felt better for two of three weeks, when the opening again contracted and the symptoms returned. Suddenly the pain disappeared. Difficulty in swallowing and impaired sense of taste persisted, voice impairment persisted and in April, 1916, Dr. Weinstein referred the patient to me for consideration of a plastic operation on the stenosed pharynx.

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*Presented before the Section on Laryngology and Rhinology of the New York Academy of Medicine, February 28, 1917.

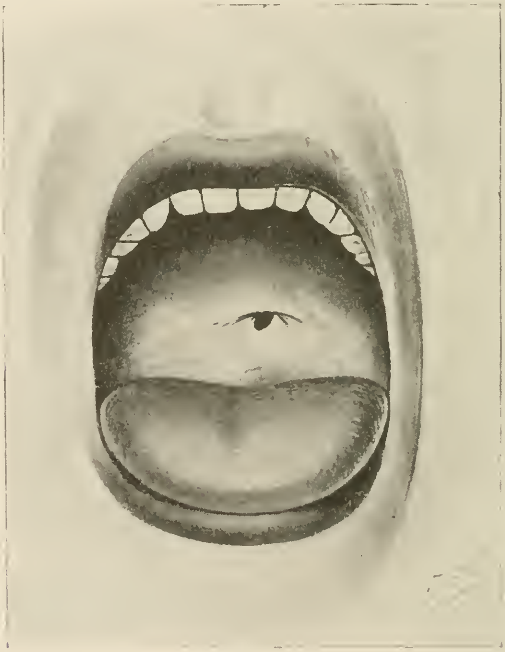

Figure 1.

From this point, information concerning the case is direct. The throat showed a small opening to the left of the mid-line, admitting the tip of a probe upward and to the left indirectly into the left nares. The pharynx presented a dome-like appearance without markings of pillars, uvula or posterior palate. (Fig. 1.) Several ulcers were present about the opening, indolent and pale, but without diagnostic characteristics. Breathing was entirely *per os*. Eating was distressing to witness because of frequent noisy interruptions to secure air. The scar on the neck was keloidal, about one-half inch wide and three quarters of an inch high.

The peculiarity of the history and the findings raised a suspicion as to the nature of the process and the explanation that such a condition arose, due to a tonsillectomy, was untenable from the history, findings and a knowledge of the high character of work done by the original operator. A specimen of blood was sent to the serologist, who reported a strongly positive Wassermann reaction, which, for the first time in the year and a half of symptoms, indicated the cause of the trouble. Under appropriate treatment a negative serum reaction was obtained and maintained since. Treatment caused prompt improvement in all the symptoms. The ulcers healed. Dilatation of the nasopharyngeal opening was done eight times, between April and August, but contraction was prompt. The keloidal scar melted away and assumed its present appearance.

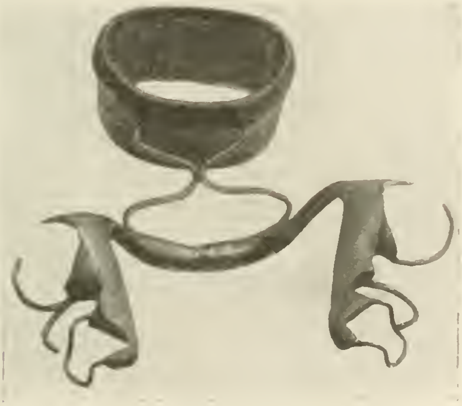

Figure 2.

It was then necessary to devise some means of obtaining a nasopharyngeal opening, which could be maintained. Simple dilatation was tried often enough to be considered inadequate. Incision and dilatation was considered equally impracticable because of the likelihood of subsequent contraction. A flap operation *per se* was deemed similarly impractable because flaps, formed necessarily of dense scar tissue, could not be obtained large enough to replace the area of scar to be excised and, unless held in place by means more permanent than sutures, would promptly curl up and restore the original stenosis. If an opening in the nasopharynx once obtained could be maintained until cicatrization was complete, the probability of cure would be reasonable. The idea of a pharyngeal tube, held in place by fixation to the teeth, was then decided upon and on this suggestion Dr. J. B. Schneer made the appliance used and illustrated in Fig. 2. It consists of a pair of wire spring holders, fitted to the molar teeth on each side of the upper jaw, joined by a bar fitting into the arch of the palate; from ths bar two wires run back to the nasopharynx and support a vulcanized rubber tube, made into a form conceived to be that which the operative opening would measure.

Operation was performed on January 19, 1917, under rectal anesthesia, Dr. S. D. Ehrlich, the anesthetist, securing a quiet uneventful anesthesia of two hours duration, without gagging or mucus hypersecretion. Incision was made in imitation of outlines of the soft palate above the existing opening on the left. Entrance into the left nasopharynx was obtained by sharp and blunt dissection, until the tip of the finger could be introduced into left nares. From the midline the tissue was dense and cartilaginous and presented a block between the palate and nares of at least an inch in depth, obliterating all landmarks. With difficulty was an opening finally made into the right nares, and when sufficiently enlarged, the edge of the lower flap was held by tension sutures to the posterior pharyngeal wall. The prosthesis was then fitted to the teeth and it was found that the

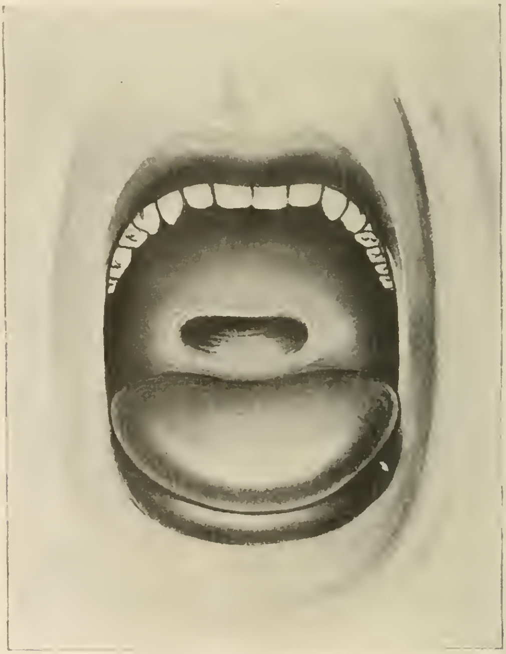

Figure 3.

anterior border rode too high and impinged on the septum. Accordingly, a bight was taken out of the vomer and the appliance readily snapped into place, the tube pressing evenly on the posterior pharyngeal wall against the flaps.

After operation, the voice became clear and distinct, but in 24 hours was completely lost. The sides of the throat became painful but no inflammatory reaction developed and the voice returned in about two weeks. The appliance has been worn more or less steadily since, removing it for one or two days at a time, or removed and replaced by the patient occasionally. At this time of presentation the tube has been in situ for over two weeks without ulceration or fetor. The appearance of the opening obtained is illustrated in figure 3 and its appearance with prosthesis in place is indicated in figure 4. Especial attention is called to the ease and simplicity of applying and removing the tube. With the tube in situ, eating is without difficulty, but on its removal the voice is somewhat clearer. When the condition of the nasopharynx will indicate that the contraction of the scar tissue will progress no further, the tube will be removed, or replaced for occasional use, by one of smaller size.

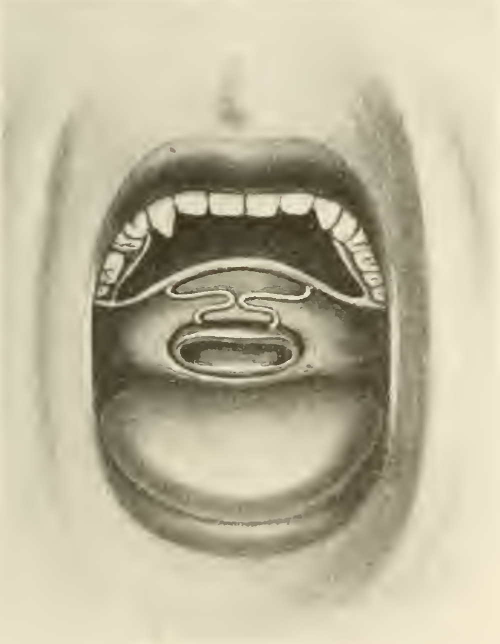

Figure 4.

A course of voice-training will be instituted to secure better resonance and permit overtones to come into play. Dr. James S.

Greene has made speech records and tracings before operation and after his course of treatment is complete, comparative records will be made and presented as a final report of the case.

A few deductive remarks may be in place. Careful investigation fails to show any history or symptoms previous to those detailed. It is probable that primary infection occurred in the throat, some time after the tonsillar operation, which must be held blameless for the subsequent course. That the infection was innocent, is beyond a doubt. The adenitis was luetic in nature and a re-examination of the specimen shows a slide which may have been either tuberculous or luetic, but the latter was not mentioned in the report because of its improbability. Of course, a large solitary gland in the submaxillary region should have inclined the pre-operative diagnosis in favor of the existing condition rather than tuberculosis, but improbability was responsible for its failure of consideration. Gummata finally developed in the throat and extensive destruction and productive inflammation occured, in which the former process, however, was less active than is usual and the commoner defects of the palate did not occur. After the diagnosis was made, the problem was simplified and the remaining difficulty of securing the nasopharyngeal opening seems to be solved in this case by the use of the appliance. Especial attention is directed to the degree of stenosis, as in cases previously seen or reported, I have found none so extensive, the usual case showing merely adhesions between the uvula and fauces without destruction thereof, and simple operations have usually sufficed. The use of setons of gauze, silk or rubber may be adapted to such conditions, but the necessity of subsequent bouginage makes the inconvenience anything but negligible. One case was reported before this section in which a stenosis of the choana narium was treated by a drill opening, establishing the communication between the nares and pharynx, which is not only apparently insufficient but must require frequent dilatation to maintain it. In the case herewith reported, each side of the nares admits the finger tip. It is true that the tendency to contract characterizes a process such as is described, yet slighter degrees of stenosis with the opening made catheter size, have been reported to maintain the opening after epithelization has been completed.

To one unfamiliar with the course of the case in which this prosthesis has been employed, the criticism may arise that the tube looks cumbersome. The best commentary on that point is the fact that the patient, although permitted to remove and replace the appliance, prefers to leave it in situ, as she is unaware of its presence.

301 East Seventeenth St.

A CASE OF TIC DOULOUREUX TREATED BY THE AVULSION METHOD OF DR. ERNEST LAPLACE.*

Dr. H. Holbrook Curtis, New York City

The removal of the Gasserian ganglion with the surgical difficulties and danger to life, makes us welcome any new procedure for the relief of this most agonizing trouble, trifacial neuralgia, commonly described as *tic douloureux.*

While the description of the operation of Dr. Ernest La Place of Philadelphia was first published in *The New York Med. Jour.,* December 9, 1905, it does not seem to have been given the attention by the medical profession that some of the wonderful results have merited. We all know of some cases in which after a supposed removal of the Gasserian ganglion there has been recurrence of the neuralgia, and we are familiar with many cases where a resection of the peripheral nerve has produced an apparent cure for a long period, but eventually there was a recurrence of pain as the nerve regeneration was re-established.

The regeneration of the peripheral nerve, and the fact that after apparent removal of the ganglion the sensory fibres are enabled to form some connection with the central tracts in the medulla independent of the Gasserian ganglion, thus explaining the failure of the major operation to afford permanent relief, makes us consider the avulsion method as a procedure to be attempted before we resort to the removal of the ganglion. Collateral anastomosis is apt to occur after injections which are supposed to form an inflammation of the fibro-connective tissue and to strangle nerve impulses and function by cicatrization. The description of the operation of La Place has been very misleading. In a recent elaborate book on the subject of bone surgery, written by an eminent surgeon of this city, the removal of the branches of the fifth nerve is pictured as being done by torsion with a simple artery forceps, a plan I think impossible of accomplishment. I will briefly explain the steps of the avulsion operation which Dr. La Place insists upon as essential to success.

Mrs. J. S., aged 61, had always been healthy until seven years ago, when the first attack came on suddenly, while in Paris. The pain first apeared in the supraorbital branch of the trigeminus, and for a year was confined to the forehead and about the eye. Then the infraorbital or superior maxillary branch became affected. The inferior maxillary was never involved. The attacks became more severe three years ago, when at times the suffering she endured is indescribable. For days she would go without food or drink because the contact of a tumbler or opening the mouth to take food would bring on a paroxysm of such frightful pain that she was absolutely unable to endure it. In that condition, I have introduced a small urethral catheter through the nose and injected a pint of milk into the stomach.

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*Read before the New York Academy of Medicine, December 20, 1916.

In May, 1915, she was for five weeks at the Neurological Hospital, and was seen by Dr. Joseph Collins and Dr. Elsberg, who gave the patient alcohol injections in the region of the Gasserian ganglion. These did not prove efficacious, and a removal of the ganglion was contemplated. At this time, after five weeks at the hospital, I heard from an assistant of Dr. Ernest La Place of Philadelphia, of several cases of trifacial neuralgia which had been cured by the avulsion method of that surgeon. I investigated the matter, and determined to send her to the Medico-Chirurgical Hospital of that city and put her under treatment. I accompanied her and was present during the operation, and my daughter remained with her during her convalescence, a period of two weeks.

Description of the operation. The region of the superciliary ridge and the superior maxillary region were cleansed, and painted with iodine. A crescentic incision was made just below the border of the orbit and the infra-orbital nerve was exposed at the exit from the infra-orbital foramen and freed, in order to allow a long-bladed hemostatic forceps to pick it up. After engaging the nerve and freeing it from the artery, the forceps was firmly held and rotated in the manner of a corkscrew from left to right. After one complete rotation, very slowly made, the minute branches of the nerve could be seen as a white filamentous tree on the upper lip and region of the alae of the nose, the face being very congested from the anesthetic. One or two minutes were allowed to elapse between every slow rotation of the forceps, and the nerve wound around the instrument from the central and distal extremities. About four and a half revolutions of the forceps were necessary before the nerve was wrapped on the forceps, freed in its entirety. Dr. La Place then unwound the nerve under water in a glass dish and laid it out on a dark background to be sure that every filament was intact.

The avulsion of the superior orbital branch was done in the same manner, and the nerve removed as totally. The rather free incisions healed in a few days, and the patient returned to New York in two weeks. Since the day of the operation in December, 1915, the patient has not had a twinge of pain in her face, and from being a most desperate sufferer she has become a perfectly healthy woman, having gained twenty pounds in weight after the operation.

130 W. 59th St.

A STONE REMOVED FROM THE ESOPHAGUS OF AN INSANE PATIENT.

DR. H. ARROWSMITH, Brooklyn, N. Y.

Subject to future correction, I venture to present this stone as the largest unyielding, rigid and "unmanipulatable" (if I may coin a word) foreign body extracted entire by means of per oral endoscopy, to this date. Some dentures may have had a greater superficial area and some meat masses a greater cubic content, but such articles have been susceptible of compression, rotation or other change of presenting surface, or of piecemeal removal.

On February 17, I was asked by Dr. Gordon Gibson, Attending Surgeon to the State Hospital for the Insane, at King's Park, Long Island, to remove a foreign body, supposedly a pebble, from the esophagus of a patient at the Institution.

Joseph L., twenty-eight years of age, a painter by trade, suffering from dementia praecox, reported on February 16 to Dr. R. E. Blaisdell, the house officer under whose care he was, that he had a "pain in his throat." On being questioned, he admitted having swallowed "a pebble about as thick as his finger and somewhat longer than that diameter," the previous day. He refused to attempt to swallow solids, and liquids were promptly regurgitated, mixed with blood. A stomach tube was passed and halted ten inches from the incisors. The insertion of a probang, which I am assured was gentle and careful, corroborated the presence of an obstruction at that point. Owing to the lack of an X-ray apparatus in the hospital's equipment, no radiographs could be made to determine the size, shape and position of the foreign body.

On the afternoon of February 17, with the assistance of Drs. Gibson and Blaisdell, and in the presence of a number of the hospital staff, the patient being under oil-ether colonic anesthesia (Gwathmey's method), I passed the medium-sized Mosher ballooning esophagoscope, noting that there was absolutely no laryngeal stenosis, although the arytenoids were distinctly abraded, slightly swollen and bled easily (though moderately), the same being true of various areas in the esophagus. Ten inches from the incisors, I stopped at a foreign body, covered with a thick bloody secretion. After cleansing, this was seen and *felt* to be a stone. The rather swollen esophageal wall could be pushed away from the intruding mass to a very limited distance, not enough to make me feel safe in attempting to pass any instrument down beside the foreign body. Inspection of the accessible presenting surface convinced me of the futility of attempting to seize and extract the stone by forceps.

Rather forcible ballooning distended only a very small part of the left lateral wall of the esophagus and through the lumen, thus indicated, I passed the Jackson mechanical spoon, keeping the spoon blade in contact with the left surface of the stone. When the spoon was felt to be free to move, I turned it to a right angle and pulled upward, with force enough to break the instrument, but not to budge the stone. Fortunately I had with me the Jackson safety-pin closer, made on the same principle as the mechanical spoon. This was introduced in the same way, the tube lip was pressed firmly against the upper surface of the stone, the right against the tube end. Tube, stone and pin closer were slowly withdrawn together. I estimate the tractive force necessary to start the withdrawal at a minimum of 40 pounds, probably it was more. The stone escaped from the instrumental grasp in the pharynx and was finally delivered by the operator's finger. It measured 2 by 1⅜ by 1 inch, the greatest impacted circumference being 3¾ inches; its weight was 630 grains.

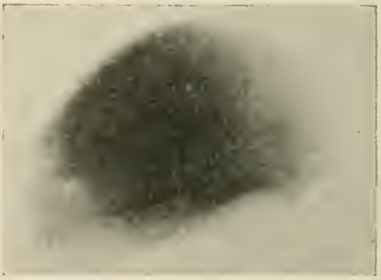

Fig. 1.

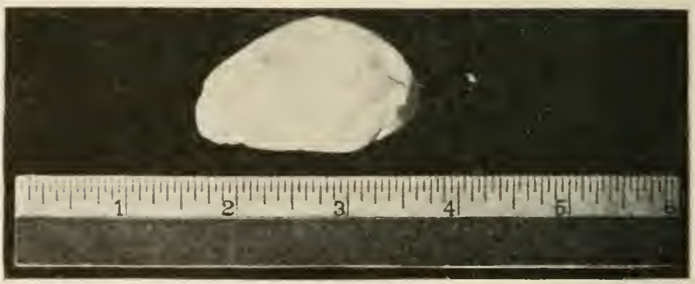

Fig. 2.

Immediately after extraction, the respiration became very slow and shallow and the patient was markedly cyanotic. I at once again passed the esophagoscope, assured myself that the larynx was unobstructed and found that the esophagus, though somewhat more abraded than on the first inspection, was not lacerated and that the bleeding was negligible. A hypodermic injection of atropin 1-50 grain was given, and I asked Dr. Gibson to do a tracheotomy, although I was certain that the air passages were patent. Immediately after introducing the tracheal tube, the patient resumed normal breathing and the cyanosis quickly disappeared. I attribute this to the stimulation by the impact of cool air on the tracheal mucous membrane. The respiratory failure was due, I am convinced, to a vagus reflex inhibition from the forcible removal of the stone, the degree of force, in my opinion, being entirely justified by the exigencies of the patient's condition and the nature of the foreign body.

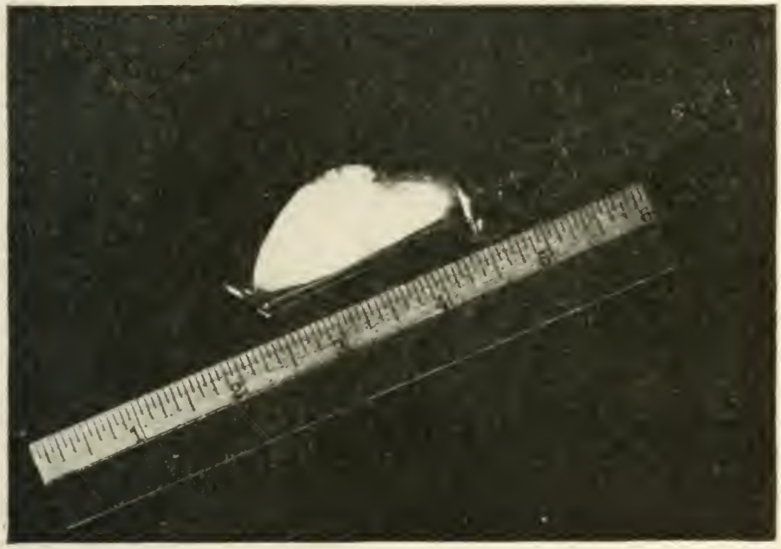

Fig. 3.

The tracheal tube was removed the next morning and the patient could swallow without much difficulty. Three days afterward he passed "three smooth white pebbles about the size of ordinary marbles, some sand and the split half of a lead pencil about two inches in length."

How a mass of this form and texture could have been induced to make its original entry is beyond my comprehension. It is, perhaps, an interesting fact that the greatest diameter in contact with the esophageal walls lay antero-posteriorly instead of transversely, as is usual.

This experience emphasizes Jackson's counsel: Study the problem presented in each instance, before commencing the mechanical attempt at extraction.

It also accentuates my previous conviction of the importance in the endoscopist's armamentarium of Mosher's esophagoscope, without which in the present instance, handicapped by the lack of radiographic information, I would have been strongly tempted to abandon any effort to remove the foreign body. Thanks to Jackson's inventive genius, the means of removal were also provided, in mechanical principle if not by intent. His recently devised spoon forceps, evolved from the early mechanical spoon, if modified to meet distant esophageal problems, will solve many future riddles which may be presented.

The time consumed in the actual examination and instrumentation of this patient was about ten minutes.

My sincere thanks to Dr. N. C. Beers are proffered, for his admirable photographs, showing the stone (in scale) and the mechanics of its removal.

I was unable to find any radiographic reproduction of a common stone, so as a matter of interest and perhaps of information to others, Mr. Shrope, the radiographer of the King's County Hospital, made an x-ray of the stone directly superimposed on the plate of which this is a print.

170 Clinton Street.

LUETIC PARALYSIS OF RIGHT VOCAL CORD.*

Dr. George E. Davis, New York City.

The patient, age 20 years, consulted me January 5, on account of a sore throat, which began rather suddenly about three days previously. He said it was difficult and painful for him to speak or swallow. His voice was husky, and enunciation indistinct.

On inspecting the mouth and pharynx the first thing that attracted my attention was that the soft palate was drawn up and to the left so that the uvula was displaced to the left about mid-way between its normal position in the centre and the left tonsillar pillar. The pharynx was not markedly inflamed nor were the tonsils, though the latter were moderately hypertrophied and probably the seat of infection.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, January 24, 1917.

The laryngoscope revealed complete paralysis of the right vocal cord and right side of the larynx and pharynx.

As there was no acute intra-laryngeal condition to account for the paralysis I went into his family and personal history, endeavoring to trace the etiology of his trouble.

Family history. Father died at the age of 54, but the patient does not know the exact nature of his final illness; thinks it was Bright's disease with complications. Mother died of acute pulmonary tuberculosis at the age of 34. He has three sisters—22, 15, and 12 years old, respectively. The two older sisters had goitre. Both were relieved by medical treatment. One brother, 18, in good health.

Personal history. Ten years ago, at the age of ten, he had a severe illness which was pronounced typhoid fever by one doctor, and meningitis by another. Following this illness he noticed he was deaf in the left ear.

Functional tests revealed total loss of function—both acoustic and static—of the left ear. The functional tests of the right ear were significant in that they showed the hearing for low notes was normal (16-2V), high notes slightly lowered (Galton .7), and the bone conduction reduced 13 seconds, the latter notwithstanding a history of a mild tubo-tympanic catarrh, indicated in the right ear at times by a sensation of stuffiness and tinnitus.

There is moderate hypertrophy of the thyroid, more on right than on the left as you will note. I hardly think though, that pressure from this on the recurrent laryngeal can be sufficient to produce paralysis of the cord.

You will note an inclination of the patient's head to the left, the muscle tonus of the right arm and right leg is diminished, as also are the reflexes on the right.

Diagnosis. The total deafness on the left, taken in connection with the diminished or shortened bone conduction on the right, particularly in a boy of twenty, and that, too, in spite of a mild middle ear catarrh, thoroughly decided in my mind the luetic origin of the paralysis, though the patient gave negative personal history. The diagnosis was confirmed by a plus four (4+) Wassermann. His infection, I think, is hereditary.

In arriving at a diagnosis in this and similar cases, the following etiological factors are worthy of note. As asserted by Wright and Smith in their text book, *cortical* tumors, hemorrhages, degenerations, meningeal inflammations and cranial depressions are hardly to be regarded, *per se,* as the cause of laryngeal paralyses. However, they may be associated with central lesions as ascending or descending degenerations, due to syphilis, the latter being the direct cause.

Seat of the syphilitic lesions. Clinical experience warrants the assertion that the seat of the luetic lesions most frequently responsible for laryngeal paralysis is in the floor of the fourth ventricle. The fact that, as in the present case, we have associated paralyses—palatal, pharyngeal (and slight facial), indicates that a unilateral lesion situated in the bulb may cause a unilateral paralysis of the cord on the same or opposite side, depending on the seat of the lesion, whether above or below the decussation of the nerve supply. In the case here reported the seat of the lesion probably is on the opposite side to the palatal and laryngeal paralyses. Nevertheless it is possible the loss of the ear function may have been peripheral, the lesion affecting the end-organs of the eighth nerve alone on that side. (A so-called "neuro-recidive.")

This loss of ear function antidated the present *clinical,* pharyngeal and laryngeal symptoms some ten years, but withal, the date of the *anatomical* lesion of the laryngeal paralysis in this case is questionable, for as it is well known the abductor nerve supply is the first to go in progressive lesions, and moreover, that a unilateral median position of the cord often does not obviously affect the voice and respiration at the initiation of the paralysis, therefore, the more or less sudden manifestation of difficulty and pain in vocalization and deglutition does not necessarily evidence the simultaneous occurrence of the paralysis. I am inclined to the belief that the paralysis is of rather prolonged standing, and that the sudden advent of symptoms affecting the vocalization and deglutition was precipitated by the development of an acute cold.

50 West Thirty-seventh Street, New York.

RIB TRANSPLANTATION FOR CORRECTION OF EXTERNAL NASAL DEFORMITY; UNUSUAL EXPERIENCE IN 2 CASES.*

DR. WILLIAM SCRUTON, New York City.

Case 1. The patient, a girl 17 years old, presented herself at the Manhattan Eye, Ear and Throat Clinic for surgical treatment of a typical saddle nose. Luetic origin was immediately suspected by reason of her general appearance, notwithstanding the negative family history given by the parent. Blood examined for the Wassermann reaction proved negative. Potassium iodide was given for several weeks and then the cerebrospinal fluid was examined for the Wasserman reaction. This also proved negative. Later a luetin reaction was made and proved negative. A provocative dose of salvarsan is under consideration, but up to the present it has not been convenient to arrange for it as the patient does not wish to remain away from employment for a day.

The family states that the deformity occurred after a piece of bone sloughed from the nose, following a severe trauma when the girl was an infant.

The possibility of latent lues and the consequent influence in the progress of the case were appreciated at the time of operation. The type of operation employed was the very simple procedure which has become so general through the presented cases and writings of Dr. William Wesley Carter. It consisted in making an incision across the nose at the point where the connecting bar of a pair of eyeglasses would naturally apply when in position, and undermining the subcutaneous tissue above and below the incision to form a pocket for the transplant. When the transplant was placed in position an endeavor was made to anchor the upper end beneath the periosteum; it proved unsatisfactory from a cosmetic standpoint and was abandoned.

The result was apparently excellent, the patient being discharged from the hospital in ten days. About five days later she returned with a swelling extending from the bridge of the nose well on to the forehead. Incision was made through the scar and a large quantity of pus evacuated. There was very little drainage from day to day thereafter. The transplant was purposely not removed because it was thought that nature would produce a certain amount of thickening in the tissues in the effort to extrude or absorb, and some measure of the correction might thus be saved. The discharge of pus practically ceased while the transplant remained solidly in place, much to my surprise. The wound was allowed to close and absorption progressed, resulting in the anticipated thickening and consequent correction of a very appreciable amount of the original deformity. It is chiefly for this reason that the case is presented for record.

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*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, February 28, 1917.

Case 2. This patient, a young man about 22 years old, presented himself at the Manhattan Eye, Ear and Throat Clinic complaining of difficult nasal breathing as a result of trauma occurring some years ago. He had consulted a number of surgeons in another city concerning the advisability of a submucous resection of the nasal septum. Owing to the type of septal deformity present they considered that it could not be done in a manner to insure satisfactory breathing space without a strong probability of increasing a slight sinking of the cartilaginous portions of the nose which was already present. I was in thorough accord with his previous consultants, but realized that something must be attempted by someone, and it might as well be by me.

A submucous resection of the septum was done under ether as local anesthesia was refused. The operation progressed very satisfactorily until I attempted to remove the high portion of the tremendously thickened and hardened cartilage, when with the forceps engaged the power of my hand was not sufficient to force the blades through for a bite, and a twist of the instrument was necessary. I distinctly felt, with the fingers of my free hand on the nose, a decided sinking at the moment the twist was made.

The result gave good breathing-space with an increased external deformity (depression). The deformity, however, did not annoy him for about a year. He then returned to have it corrected.

The operation for transplantation of the section of rib was performed as in case 1, with this exception: It was found that a piece of rib sufficiently long to extend from the tip to the root of the nose made the bony portion of the nose too high and resulted in a grotesque appearance when placed in position. A short piece of rib section was then tried bridging from the beginning of the bony portion of the nose to the tip. This was not quite satisfactory so another section was placed under it, giving a slight boost and the desired result obtained. This unusual procedure is the reason for placing this case on record. I wish to thank Dr. John E. Mackenty for advice and assistance at this operation.

27 East Fifty-seventh Street.

UNUSUAL COURSE OF PUS IN THE NECK OF A CASE OF MASTOIDITIS.

Dr. John W. Durkee, Brooklyn, N. Y.

The following case of mastoiditis is reported because of the unusual course taken by the pus in the tissues of the neck.

A. D., age 50, gave the following history. About January 27 he had neuralgic pains in the right side of the head which became severe enough on March 4 to keep him from business. On March 22 the ear began discharging and the discharge continued. At the time the discharge began a swelling appeared behind the auricle. After two weeks this swelling disappeared and a few days later a swelling appeared in the upper part of the neck at the tip of the mastoid and increased in size.

The patient came under my care April 20. The right auditory canal was filled with thick pus and there was sagging of its pastero-superior wall. In the upper part of the neck just below the mastoid and extending a short distance over its tip, but not over the body of the mastoid, was a red, soft, fluctuating swelling about the size of a large hen's egg. There was no swelling or edema over the body of the mastoid. There was no auricular tenderness, no tenderness over the antrum or body of the mastoid, and only slight tenderness over the swelling in the neck. The temperature was 98.2°.

Urine examination: Volume in twenty-four hours 1,900 cc.; acid in reaction. Sp. gr. 1.034; urea 1.7 grams per 100 cc.; sugar 3.6 grams per 100 cc.; albumen, trace.

Immediate operation. An incision of the fluctuating tumor in the neck opened a large abscess cavity which extended about two and one-half inches below, and about one-quarter of an inch over, the tip of the mastoid. The pus was not in the deep tissues of the neck but directly under the skin and external to the sterno-mastoid. The usual mastoid incision was then made and the periosteum elevated. In the bone directly over the antrum and the outer part of the canal wall was a necrotic spot, about one-half inch in diameter, which was filled with granulations. Extending under the periosteum from this spot, and over the bone and fibers of the sterno-mastoid, was a sinus that connected with the upper part of the abscess cavity in the neck. The cortex was removed, and the body of the mastoid was found broken down and filled with pus and granulations and the cells in the tip were congested. Below the antrum and between the lateral sinus and the canal wall were some deep cells. These were uncovered thoroughly but were not curetted because of the fear of injuring the facial nerve. The bone over the upper part of the sinus and over the dura of the tempero-sphenoidal lobe near the sinus, was gone, and sinus and dura were covered with granulations. These were not disturbed but the bone was further removed in all directions until healthy dura and sinus were found. The mastoid cavity was cleaned out thoroughly and packed with plain gauze. On April 24th the patient complained of difficulty in swallowing. There was no pain or sensation of a swelling in the throat; he merely had to make an effort to swallow. If he held the larynx up, swallowing was easier. It was first learned at this time that this symptom was present two days before the operation. The first dressing was done on the 24th and when the packing was removed at least two drahms of thick pus welled up from the deep cells that were between the sinus and the canal wall. The irrigation passed from these cells into the patient's throat. The rest of the wound appeared healthy.

Until May 1 at each daily dressing a large amount of pus came from the deep cells and the irrigation passed into the patient's throat. When he swallowed, air came through the deep cells in the wound, but the patient could not force air through. Efforts were made to locate the opening in the throat, but without success. At this time deep fluctuation was detected low down in the neck behind the sterno-mastoid and a large abscess was opened, under local anaesthesia. In irrigating this abscess the solution went into the patient's throat and came through the deep cells in the mastoid.

On May 4 the mastoid wound was healing well, there was practically no pus in the deep cells below the antrum, and the irrigation did not pass from them into the throat or into the wound in the neck behind the sterno-mastoid. There was still a great deal of pus coming from this neck wound.

On May 7 erysipelas appeared around the wound and involved that half of the face and head.

The temperature for the first ten days after the operation, to April 29th, did not go above 99.6. The next three days, April 30 to May 2, it reached 101.4. From that time until the death of the patient on May 7, it did not go above 100.

142 Clinton Street.

FIBROMA OF THE ETHMOID REGION.*

Dr. Robert H. Fowler, New York City.

The patient, John M., came to Dr. MacKenty's clinic at the Manhattan Eye, Ear and Throat Clinic in December, 1915. His chief complaint was obstruction in breathing. Examination revealed a polypoid mass completely occluding the right nostril. A piece of this growth was snared off and sent to the laboratory which reported "fibroma, hard in part; round cell infiltration."

There was a good deal of debate at the time as to whether the growth was benign or malignant. Operative procedures were decided upon and the patient was induced to have the growth removed, although he was informed that the operation would be a serious one. In January, 1916, under general anesthesia, a posterior tampon was inserted and the anterior part of the growth was removed with a snare; then the tampon was removed and the growth was seized with adenoid forceps through the naso-pharynx and removed in two masses, each about the size of a man's finger. (Specimen presented.)

The patient sustained extreme shock and hemorrhage at the time of operation, the flow of blood being so profuse after removal of the first part of the growth that he was threatened with exsanguination before the completion of the operation., However, as soon as the removal of the mass was completed the hemorrhage lessened and it was possible to examine the site of the growth before packing off the cavity. A large part of the ethmoid cells came away with the mass, and the ethmoid cavity was left open.

The pathological report on the specimen was: "Complex growth; fibromatous infiltration of polyps, with inflammatory invasion. Vessels well formed; very highly vascular, a point against its being sarcoma."

A proliferation of the pieces which remained behind took place about a month after the operation. To check this, several injections of trichloracetic acid were made by the method that Dr. Harmon Smith has described, and since last summer the patient has had no treatment except that he has used ichthyol ointment from time to time to improve the condition of the membrane, on which huge scabs formed soon after the operation.

Previous to operation the patient's weight had been stationary at 110 pounds for two years, but since then he has gained twenty pounds and his general health is excellent.

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*Read before the New York Academy of Medicine, Section on Rhinology and Laryngology, Feb. 28, 1917.

The three points of interest in this case are (1) The size of the growth, it being as large as two fingers, displacing the septum and totally occluding the nares. (2) Method of removal, the adenoid forceps being applied posteriorly. (3) The hemorrhage was extremely severe until the growth had been removed, when it suddenly lessened.

11 East Forty-eighth Street.

REPORT OF TWO CASES OF ATROPHIC RHINITIS TREATED WITH ICHTHYOL OINTMENT.*

DR. ROBERT H. FOWLER, New York City.

The first case illustrates the treatment of simple atrophic rhinitis. The patient came to the clinic at the New York Dispensary ten months ago, with a history of seven years of unsuccessful treatment for nasal disease. There was at the time a great deal of scabbing in the nose and throat. The chief complaints were headache and lack of sleep. The patient stated that for seven years he had used aqueous douches in the nose, and he was then using salt and water three or four times a day.

Examination revealed the characteristic scabbing of atrophic rhinitis, but there was not the odor of ozena. The patient was directed to discontinue the use of douches, and was instructed to use an ointment consisting of ichthyol, grs. 20; menthol, grs. 2; and petrolatum, 2 ounces. This to be applied three times a day on cotton in each nostril.

The patient has followed this treatment regularly and has had no operation. The membranes of both nose and throat are now clear of scabs, and he asserts that he is able to omit the treatment for a week without the recurrence of the scabs. He sleeps well, has no headaches, and his weight has increased from 139 to 152 pounds.

Without going into a definition of the term, atrophic rhinitis, it may be said that there is a well-defined number of cases that appear in our clinics characterized by a change in the appearance of the mucous membrane of the nose and naso-pharynx. In the milder cases, the mucous membrane of the nose is luster-less; in the more severe types, crusts are present; the patient complains of an obstruction in breathing; pharyngitis sicca is almost invariably present; epistaxis is a frequent complication.

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*Reported by invitation, before the Section on Laryngology and Rhinology, New York Academy of Medicine, February 28, 1917.

A remarkably large number of the patients presenting these symptoms give a history of having used salt and water or some other form of nasal douche. This gives apparent relief, but is not permanently beneficial. Some of these cases require operative measures, and here the ichthyol treatment may be used before and after the operation to improve the condition of the mucous membrane; on the other hand, there are cases which may be entirely relieved by the use of the ichthyol ointment.

In ozena, the same treatment relieves the scabbing condition and does away with the chief symptom, namely, the odor, so long as the patient continues the treatment, but if it is neglected, the symptoms will recur.

The procedure of stopping the nasal douche and employing an ointment instead is not only efficacious in the milder cases of atrophic rhinitis, but in cases where operative procedure is required it is a distinct aid. For instance, in many cases of ethmoiditis, the best preparation for the operation is a course of this treatment to first improve the general condition of the membrane.

To repeat: The use of the nasal douche continued over a long period of time, injures the mucous membrane of the nose; while a bland salve applied to the membrane lessens the tendency to scabbing and hastens the return to a normal condition.

The second case was typical ozena occurring in a woman 22 years of age, who first came to the clinic four months ago complaining of a disagreeable odor from the nose, extending over a period of two years, during which time she had been using salt and water as a nasal douche. Examination revealed scabs an inch and a half long throughout both nostrils and on the posterior pharyngeal wall. The characteristic odor of ozena dominated the neighborhood of the patient; her cheeks were pale, and she was very anemic. Six weeks after giving up the douche and using the ichthyol ointment, the scabbing ceased There is now no odor, and the general health of the patient is markedly improved.

There is no claim that this is more than a palliative treatment so far as ozena is concerned. The object is simply to improve the condition of mucous membrane, not bone.

11 East Forty-eighth Street.

A CASE OF ACCESSORY TONSILS.

Dr. J. A. Hagemann, Pittsburgh, Pa.

In January, 1917, the writer performed tonsillectomy upon a young lady to preclude the recurrence of tonsillitis, from which she had repeatedly suffered. The operation and subsequent recovery presented nothing extraordinary. But several weeks later she complained of some discomfort at the right side of the throat. Examination revealed curvilinear fissures about five-sixteenths of an inch in length on either side of the soft palate and ranging evenly with the anterior pillars. The left one would escape cursory view, while the right one was characterized by redness and slight infiltration of the approximate edges. A curved probe was readily inserted, and a little manipulation revealed the presence of a tonsillar mass, about equal to a pea in volume, in each cavity. The invasion of infectious material, causing slight local inflammation, led to the discovery of this unconformity. After removal an unmistakable cavity, entirely separate from the tonsillar fossa, was in evidence. The wounds soon cicatrized.

The apertures which appear near the caputal extremity early in the embryonic development of all vertebrates are the prefigurement of the so-called branchial clefts through which water continuously passes outward after transcurring the mouth in the lower vertebrates, such as fishes. In this manner oxygen is extracted from the water by the venous blood flowing through the gills, and thus under-water breathing is accomplished. Among amphibians much the same sub-aquatic breathing arrangement is persistent throughout life. It is plausible that the human tonsils are bated survivals of respiratory organs that functionated at an early stage of man's phylogeny. The human foetal unfoldment is in effect a compendious record of man's developmental metamorphoses. Early in his embryonic evolvement he successively assumes and relinquishes the characteristic traits of his primordial ancestry. Occasionally one or more of such traits endure post-natal, and even throughout the individual's life. Fistulous communication of the pharynx with the external surface of the neck and persistence of the thyro-glossal duct, both unsuppressed lineaments of piscine ancestry, are not absolutely infrequent. Rarely, however, does one come upon supernumerary tonsils. These are presumptively likewise due to persistence of embryonic vestigial media, an atavistic recrudescence of organs one time performing subaquatic oxygenation, then ranged in collateral pairs, each supplemental to a pristine branchial cleft.

Highland Building.

THE CLINICAL ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

On November 1, 1917, the Clinical Association of American Peroral Endoscopists was organized in Philadelphia.

The purpose of this new society is, in the words of its Constitution: "The study of diseases and accidents occurring in the respiratory and upper digestive tracts, of borderline conditions and their treatment, medical and surgical, by direct inspection."

The Association also aims to impress on the internist and general practitioner the value of bronchoscopy and esophagoscopy as diagnostic methods of precision so as to make possible the accurate ocular study, in the living subject, of pathological conditions of the esophagus and lungs.

The officers of the Association are the following:

President: Dr. Chevalier Jackson, Philadelphia.

Vice-president: Dr. Hubert Arrowsmith, Brooklyn, New York City.

Secretary-treasurer: Dr. Henry Lowndes Lynah, New York City.

Members of the executive committee: Dr. Wolf Freudenthal, New York City, and Dr. Samuel Iglauer, Cincinnati.

Dr. Henry Lowndes Lynah, New York, has been appointed Professor of Direct Laryngoscopy, Bronchoscopy, Esophagoscopy and Intubation at the New York Polyclinic Medical School.

Major Ewing W. Day, Pittsburg, Pa., is Chief of Division of Head Surgery, Base Hospital, Camp Lee, Va.

Dr. H. W. Loeb, St. Louis, has been commissioned a major in the Army Medical Corps and is at present in Washington.

Dr. W. H. Roberts, Pasadena, Calif., has been commissioned a captain in the Army Medical Corps.

SOCIETY PROCEEDINGS.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

(*Continued from page 860.*)

Discussion of Dr. Ralph Butler's paper continued.

Dr. Walter F. Chappell, New York City: I would like to call attention to the case of a patient, a man forty-five years old. His present illness began one month before admission, when he became hoarse. This continued and was followed by dyspnea, at first on exertion, later continuous. His only complaints were hoarseness and dyspnea. When he entered the hospital a tracheotomy was done at once, as the vocal cords were immobile and almost in contact. The Wassermann and X-ray of chest were both negative. Salvarsan was given twice and had no effect. Two weeks after admission, under suspension, the left vocal cord was removed with scalpel and punch. Three weeks later, as there was not space enough between the cords, the left recurrent laryngeal nerve was cut at the entrance into the larynx. In ten days the tracheotomy tube could be removed. When seen two months after the last operation, he was at work and breathing easily. Cutting the nerve not only allowed the vocal cord to recede into the cadaveric position, but caused an atrophy of that side of the larynx which gave still further space. The man was to report if he had any difficulty, and has not as yet, so it is presumed he is well. Several physical examinations and nerve reflexes were negative.

Dr. Greenfield Sluder, St. Louis: I would like to add the record of a case seen in consultation. A physician, twenty-eight years of age, who developed acute laryngitis, apparently a grippe, and with it a very violent dyspnea which, upon inspection, showed bilateral posticus paralysis. The cords were almost in the median line. The glottis was represented by a slit through which you could have dropped an old-time silver five cent piece. The recovery was not exactly uneventful. It required some six weeks, during which time he became excited about something and smothered almost to death. Nine or ten months later he developed another infection, laryngitis developed, and again posticus paralysis, and through the three attacks I saw him in consultation.

Dr. Bryson Delavan, New York City: Several years ago I was called in to see a case at St. Luke's Hospital suffering with dyspnea, and I found a marked abductor paralysis. I was obliged to do an immediate tracheotomy. The obstruction, however, was not entirely due to the laryngeal box. At a certain distance below the larynx, in the trachea, we also found constriction, and endeavored to overcome it by insertion of a long tracheotomy tube. The child died of exhaustion and was found to have a large tubercular lymph node pressing upon the trachea, which was evidently the cause.

Dr. W. B. Chamberlin, Cleveland: I have in mind such cases as occur in the early stage of locomotor ataxia. My attention was attracted to this a number of years ago by a patient who was found unconscious in the street and taken to the police station on the suspicion of being drunk. After the usual delay it was discovered that he was not drunk but ill. On examination we found complete abductor paralysis and other signs of locomotor ataxia. I then went over to the City Hospital and made a routine examination of all tabetics we had there, and was surprised at the number of cases in which we received no history of this condition, where we found paralysis.

Some few days ago I had a patient, a man about thirty-five years old, an Italian, who came with a history of dyspnea and difficult respiration, especially on exertion. I thought, of course, of the possibility of a foreign body, but examination showed bilateral abductor paralysis. I wished to refer the man to the hospital, but he disappeared. Some four weeks later the consultant told me that he found the man in an acute attack of dyspnea from which he succumbed in a short time.

Some Clinical Observations on the Lingual Tonsil. By Greenfield Sluder, M. D., St. Louis.

The diagnosis of lingual tonsillitis is simple in acute follicular cases. Should it not assume the follicular markings, it is often overlooked, particularly when the mass is not enlarged. It is recognized under these conditions by its color alone. The mass may be much enlarged in acute or chronic cases, which is, of course, easily recognizable. Not so easily interpreted is an occasional small slightly reddened follicle. These are often the origin of the symptoms.

The prognosis for singers and speakers, according to the writer's experience, should be guarded. A lingual tonsil which easily becomes a disturbing factor, either from the work of singing or speaking or from infection, must be considered most seriously. He does not believe that the singing or speaking voice can be developed to any great extent under these conditions.

The treatment of lingual tonsillitis in the acute follicular stage is like that for the faucial tonsils under like conditions. For the subacute or chronic state, with or without enlargement, nothing has been so satisfactory as applications of a small amount of silver nitrate saturated in fifty per cent glycerin. Salicylic acid saturated in ninety-five per cent alcohol is helpful, and does not taste so unpleasant. These may be made daily or as seldom as ten days. For the enlargement, galvanocautery destruction has seemed best. Hemorrhage following surgery of the lingual tonsil is more difficult to manage than any in the upper air passages.

Many of these observations have been made and recorded in more or less this form. The association of lingual tonsillitis with thyroid gland disturbance and with glossodynia, he believes has not hitherto been recorded.

It is his interpretation of clinical laryngology that the lingual tonsil plays a major role.

DISCUSSION.

Dr. Albert G. Getchell, Worcester: I am very much interested and impressed with this account of the lingual tonsil. The disease undoubtedly has certain lesions that we probably do not appreciate. There is no question that there is definiteness about it and its lesion. I would like to call attention to three points which have impressed themselves upon my experience: first, its relation to the nervous system; second, to hemorrhage; and third, to cough.

There is no question but that trouble in this region would cause cough, but still I think that continued cough should not be attributed to such a lesion without a most thorough examination of the lungs. Simple examination of the sputum, without any examination of the lungs whatever, will often show the real cause of the trouble.

Dr. Henry L. Swain, New Haven: I have often seen how many times the sources of little lesions and the inconveniences that patients have suffered from could be attributed to and explained by conditions found in the lingual tonsil. The circulation of the lingual tonsil is peculiar—or, rather, its relation to the veins of the base of the neck is peculiar. The veins from the surface of the tongue gather together into certain large vessels deep down in front and underneath the lingual tonsil. The sudden occurrence of a feeling of fullness is perfectly explicable when you consider these venous branches which gather together underneath the lingual tonsil.

It is equally a fact that emotional stress, like an irritable plexus, is sometimes evidenced by this feeling of a lump in the throat, and this condition which I have described explains it.

It is perfectly possible to have a lingual tonsil cough and a bronchitis existing in the same person. If one treats the bronchial part and not the lingual tonsil, he is falling far short of his duty.

Dr. J. Payson Clark, Boston: My experience has been that the enlargement of the lingual tonsil is observed most frequently in middle aged women. The enlargement of the lingual tonsil in children, in my experience, is a very rare condition.

I have had to remove the lingual tonsil in several cases, and have used Myles' lingual tonsillectome. I have also used the wire loop. If this loop can be used it is better, because you are less liable to have hemorrhage. I have not had hemorrhage in any of my cases. I remember being called late one night to see a case for bleeding, where another physician had removed the lingual tonsil that day. The bleeding was not violent, but persistent, and I had a little difficulty in stopping it.

Dr. Thomas Hubbard, Toledo: I think there is no question about the intimate association between acute throat conditions and acute thyroiditis, because I think we find many cases in which we are able to successfully treat the subacute or chronic conditions. It is most helpful in the reduction or checking of thyroiditis.

In a ten-year-old child, four years after removal of her tonsils and adenoids, her lingual tonsils were found enormously enlarged. There was no suggestion of recurrence of either tonsillar or adenoid tissue.

but these large masses were a mechanical obstruction to swallowing. I clipped off portions of the lingual masses, and following that there was no improvement and relief from dysphagia.

Dr. Robert C. Myles, New York City: There are several points about the lymphatic tissue at the base of the tongue. It seems to me that a very interesting one is whether the removal of the tonsils in early life does not by some vicarious attempt on the part of the lingual tonsil to supply the physiologic function of the tonsil, result in their becoming hypertrophied in this attempt.

It has been my habit for many years to remove lingual tonsils in a little different way from that originally indicated. On account of some hemorrhages and cicatricial tissue, I have tried to devise some method of obviating both; one was to take out every other lymphatic tonsil with a guillotine and leave an intermittent one. That aided me very much in relieving the scar tissue. I have also left islands of tissue. In using the guillotine one should not press too deeply. If you go beneath the tonsil you are more liable to have hemorrhage than if you put the proper pressure on the guillotine, which makes it possible to remove as much as you may elect.

Dr. Burt R. Shurley, Detroit: The importance of this relationship of Waldeyer's ring to the thyroid is certainly a very exact and definite thing, but the key to the whole situation, to my mind, is infection. And while my paper which was referred to by Dr. Sluder was written five years ago, I have followed up carefully a large series of cases since that time. Of course, as Dr. Sluder says, no one expects to treat cases in this manner and not have the proper surgery of the thyroid attended to when that is necessary.

In regard to cases of hemorrhage from the throat, I think perhaps there are a great many mistakes made by not properly examining the chest. We know full well that twenty-five per cent of all cases of pulmonary tuberculosis have hemorrhage at some time or other during the course of that disease, and it seems to me that it is just a matter of not thinking of that. We should always have a very thorough and complete chest examination wherever there has been hemorrhage from the throat.

Dr. John Mackenty, New York: I believe that any infection in the throat may have secondary expression in the thyroid. This was brought home to me very forcibly by the case of a man with a foreign body in the esophagus. I put in the bronchoscope and failed to get the foreign body, but found the spot where the body had rested. This man was very ill, with a high temperature and pulse, and had a tender enlarged thyroid gland. I was positive there was pus in the neck, and opened the neck and went down and found no pus. I then opened the thyroid gland, and in the center of the gland I found a large abscess which was secondary to the condition in the esophagus.

On another occasion, following the removal of the tonsil, there was considerable local infection and the patient developed acute thyroiditis. So I believe we may say that any infection in the throat or nose may have secondary manifestations in the thyroid, either simple or suppurative.

With regard to the question of bleeding of lingual tonsil, I have found benefit from forcibly pulling the tongue forward and holding it in that position for a time.

Dr. Max A. Goldstein, St. Louis: In reference to Waldeyer's ring, I think it has been rather insignificantly looked into, and Sluder's observation about the relationship to systemic infections taking place through this small lower lymphoid mass ought to give us much food for thought. We are doing a lot of operative work in the faucial tonsil, and our enucleations are coming thick and fast. We know that even when the faucial tonsil has been thoroughly encapsuled, we do have recurrences of systemic infections; and it is likely that many of those infections come, not through the lingual tonsil, but through the lymphoid masses which lie about the pillars. There is some possibility that such observations as were presented by the essayist may give us an opportunity to think of this radical surgery when the time comes for the pendulum to swing the other way.

Dr. Swain has pointed out on previous occasions that the mass of lymphoid tissue is rather dependent for its pathology and inflammation more on the intense venous relationship than on the lymphatic. I think that variosities are sometimes as frequent in lingual tonsil as are the acute and chronic follicular inflammatory reactions, but those are things this paper has brought forth, and I believe that the development of this particular phase of Waldeyer's ring will give us a little closer insight into the whole pathology of this lymphoid area.

Dr. Greenfield Sluder, St. Louis (closing the discussion): I feel that a very substantial addition to the paper has been given by Dr. Swain in his explanation of the globus hystericus. I did not know the network arrangement of the veins beneath the lingual tonsil, and it is not recorded in any of the anatomies I know of.

Dr. Clark spoke of the enlargement of the lingual tonsil in children being rare. That is not my observation. The enlargement of the lingual tonsil in children is a very frequent manifestation.

I have seen the faucial tonsil take on the recurrent inflammatory reaction with sore throat after faucial enucleation.

That the chest must be investigated in cases of cough seems to me to be self-evident.

Some Points in the Surgical Treatment of Goiter. By J. E. Mackenty, M. D., New York.

The writer emphasizes the need of laryngologists, and especially the younger men, to take up the surgery of the neck.

He considers all treatment with rest as a basis as deceptive, and the delay engendered pernicious. He does not, however, advocate surgery in all cases. In all progressive cases, short of already advanced toxicosis, some surgical effort should be undertaken, such as boiling water injections into the gland, ligation of one or more poles, removal of half the gland, with or without ligation of the remaining poles, etc.

In well developed and progressive toxic goiter nothing short of the ablation of three-fourths to seven-eighths of the gland can be relied upon to effect a cure. No operation should be considered until after the patient has been under observation in bed for a length of time, and has undergone a careful general examination.

Clinic calorimetry is now used to differentiate the active periods of the disease and to accurately determine the degree of benefit from any surgical or medical treatment. Early operation is most important. Local anesthesia should be rarely used, and never for any extensive operation. Deep anesthesia is not requisite. Rapidity of technic must be combined with gentleness of manipulation or it is valueless.

By complete operation is meant removal of from one-half to seven-eighths of the gland. In operating the four important things to be considered are: The parathyroids, recurrent laryngeal nerves, hemorrhage, and the amount of gland tissue to be removed.

These are considered in detail. Free drainage with a liberal opening is important, and permits continuous saline irrigation through the tubes, which is often exceedingly valuable.

Thyroidemia may be avoided by attention to the following points: Careful preliminary treatment, rest, overfeeding, etc.; the reduction of a minimum of fear on the part of the patient, light anesthesia, non-traumatic surgery, the judicious selection of the proper operation and correct time of operation; alkalies and water before operation, etc.

The following types of hyperthyroidism are bad risks:

1. Where the disease is progressive in spite of rest.
2. Cases showing no remissions.
3. Appearance of psychosis.
4. Very active symptoms in cases with small glands.
5. Marked exophthalmus.

No case should, however, be refused some form of surgical help, providing it can be establihsed that the disease is not in its terminal stage.

DISCUSSION.

DR. JOHN F. BARNHILL, Indianapolis: It would be a fatal mistake to attempt any sort of operative procedure in a case in which the heart is so dilated or hypertrophied as not to be able to withstand the operation. The mortality from simple cases ought to be pretty nearly one hundred per cent.

I know of no other operation in surgery, except brain surgery, where a competent anesthesia is more useful than in this operation.

Every precaution must be taken to preserve the parathyroids, and this is best done by leaving a portion of the capsule posteriorly. The capsule in this operation I believe is the anatomic structure which must be borne in mind more than anything else, and if one loses his capsule and works outside the glandular capsule, he is lost for the whole operation, and he cannot, therefore, be certain as to whether he will injure the nerve or remove one or more parathyroids. Hence, his procedure must keep the surgical and glandular capsule in mind all the time, and if he works between them it is almost impossible either to injure the recurrent laryngeal nerve or to take away the parathyroid glands.

The patient is already, in toxic cases, badly run down, and, therefore, clean and bloodless surgery here is the thing. Shock does not occur often if you do not lose much blood.

The amount of a gland to be removed is an important question, requires the greatest knowledge, and it is here, I think, that consultation is often necessary. To remove three-quarters or seven-eighths of a gland that does not need that much taken away is a mistake. To leave it if seriously diseased is equally a mistake.

There are often other glands involved along with this gland, and if that fact is not ascertained before operation and operation undertaken, the operator will almost certainly have a death, because to remove a toxic thyroid does not in such instances cure the case.

The gland must not be handled roughly or pulled up unnecessarily with heavy instruments by the operator or those helping him. It must be handled gently, because if there is toxemia there may because of rude handling of the gland be unnecessary toxicity after operation.

Dr. Thomas Hubbard, Toledo: I see many of these cases before and after operations with reference to voice interference and difficulty in respiration. Fortunately, most of the cases in which there is an impairment of the vocal action, usually unilateral, improve within a reasonable time after operation. In others a supplemental action takes place in the opposite vocal cord, ultimately producing good voice, but with permanent impairment of movement of the cord on one side.

Dr. Harmon Smith, New York City: I have tried to ascertain in how many cases the nerve was involved previous to or during the course of the operative procedure. I have reached no decision which enables me to make any statement relative to the positive number, but a great many were involved previous to the operation. There was a paresis and not a paralysis. I expect to make some reports relative to it in due course of time.

Dr. John E. Mackenty, New York (closing the discussion): The reason for two tubes is that when you take out more than half the gland you have the trachea dividing the field. If you wish to secure complete drainage, you must put a tube on either side of this tube.

I believe the involvement of the laryngeal nerve interferes to some extent with the finer quality of the voice—as for singing or public speaking.

I have injured the nerve on one side and had impairment of the voice for a fair length of time, which was always recovered from, so far as speaking was concerned.

The Mayos report considerable percentage of nerve involvement before operation. I have examined cases pretty carefully, and have not been able to corroborate this. In a few cases there seems to be some lack of proper tone or movement of the cord, but not to the extent the Mayos report in their examination of cases before operation.

DISCUSSION ON REPORT OF COUNCIL OF NATIONAL DEFENSE.

Dr. Charles W. Richardson, Washington: We, as citizens of the United States, have benefitted to an unusual extent from our citizenship in this country, more so than citizenship in any other country as individuals. We have profited by this; our success has been great, our comforts have been manifold, and it is no more than right that we should assume the duties and obligations of citizenship, and offer our services fully to our country, and encourage all those with whom we come in contact with this spirit of enthusiasm. We must stand, gentlemen, for our country, for democracy, and for the suspension of this horrible war, as soon as we can; and by giving aid and comfort and doing our utmost by enlisting ourselves and causing others to enlist, we can bring this about.

Dr. Harris F. Mosher, Boston: What the government asks of us today is a wholesale coming into their ranks without any reservation whatever. They say they can make no promises. On the side they intimate that perhaps, probably even, the special man will be used for special work, but no promises are given, so that you have to make up your minds whether you will go on with the feeling of a slacker and wait until you are asked to do special work, or go in today and run your chances of being put to work with which you are unfamiliar. The only way out of that is to stay in this uncomfortable position until some action is taken toward the forming of a special base hospital. When you read the report, if you do, you will find that was recommended. If you talk with the men from Washington you will find they feel that will come. Major Lister said that will probably come, if Pershing carries over the amount of men he is supposed to carry over, within the next six months. Until that time I am unhappy, and I feel very many of you are unhappy. I do not know what to do. It is a much easier thing to go in and a much harder thing to stand out. I for one am going to stand out until the time comes to go in and do the work I think I am more able to do.

Dr. Robert C. Myles, New York City: I have had some very peculiar experiences lately at the New York Polyclinic where we have three hundred specialists, and a lot of them have joined this corps, and I wish you could see some of the work they are doing. It is so far removed from their specialty that they know nothing about it. It is simply ridiculous. I do not know what I could do if I was sent down to the Mexican border to treat dysentery. According to what we hear, that will all be corrected later. There ought to be some action or activity, some committee formed or appointed with a medical office to plan some law to relieve the situation. The eye and ear are two of the most important organs in war.

Dr. Joseph H. Bryan, Washington: This is a very important matter for us as citizens and as specialists, but we must remember that we are at a very grave crisis, and every man, young and old, every woman and every child, has got to come forward and do something. This is no child's play. This war, according to the best thinkers and the best observers, is not going to be over this fall, this winter, or even next, and every resource of this country has got to be utilized. I have gone into the Officers' Reserve Corps, having served some years ago in another branch of the service. Of course, it is a very hard thing to do, to go in and abandon the care and responsibility I have, but nevertheless I feel that having served once it is my duty to go there again. I have gone in voluntarily and am willing to accept any position. I have accepted a subordinate rank; I can serve as Captain just as well as Major, and am perfectly willing to do that, but we are all in bounden duty to do something to help out in this crisis. On the other hand, I think if the matter is brought very forcibly to the attention of the Surgeon General of the United States Army by these various societies, representing that men of experience, men who have developed these specialties of the eye, ear, nose and throat, are best fitted to work in the base hospitals or some hospital devoted to the treatment of diseases resulting from injuries, and that they can best serve their government if their services are utilized along these lines. I am sure the Surgeon General will treat you courteously and possibly do something along those lines. Of course, you must remember that the war department has been working on a basis of a hundred thousand men, and has to work now on a basis of over two million men, and have not got the system or force to combat these difficulties. They are swamped with work at present. But if we will take the stand and assert that our services are best utilized along the lines on which we have been working, I believe some impression will be made upon them. In the meantime we can all go in and serve our country, to the best of our ability.

Dr. Burt R. Shurly, Detroit: It will undoubtedly be necessary to establish a number of base hospitals of the eye, ear, nose and throat. We have one by way of example in the British army now located at Folkestone, which has done very wonderful service for the British army. If we could have a base hospital on the foreign service, and one in this country, or more as will be necessary, and organize the eye, ear, nose and throat hospitals of the various large cities as they are already organized, and have a definite method of referring all cases from these five hundred bed base hospitals or the general hospitals to the special hospitals, we would undoubtedly be able to organize and establish a splendid service for the army of the United States at home and abroad.

It seems to me that this wonderful scientific usefulness simply requires organization and authority. Without the authority of the Surgeon General's office we can do nothing whatever, because there must be a definite plan of work, and the organization must be a definite one, and follow along a very definite plan, which has been worked out with very great detail by the Surgeon General's office.

Undoubtedly, the organization and equipment of an eye, ear, nose and throat hospital would require special organization and equipment. These are things, which have never been done before in this country. Therefore, it does seem to me the time has come when a committee from these various societies should organize and send out at least two base hospitals. There could be forty-eight highly trained efficient specialists to care for certain cases sent from the various base hospitals which the ordinary eye, ear, nose and throat man on the staff of this hospital would not be able to properly care for.

DR. JOSEPH H. BRYAN, Washington: I would like to emphasize one fact. In case this committee is appointed, and I hope it will be, the matter can be brought directly to the attention of the Surgeon General, and the fact emphasized that the men who are highly trained in the various specialties will be wasted if they are sent on the ordinary staffs, and the point made that now there is actually a very great waste of good material to be sent on duty of that kind when the younger men can be utilized for that purpose, and that we as highly trained specialists should be called upon to do the work as outlined by Dr. Shurly.

DR. CHARLES F. RICHARDSON, Washington: If we appoint this committee, which I hope will be done, I am sure the Surgeon General and assistants, both of the army and navy, will listen to that committee and will do all that that committee wishes—that is, within reason.

Every man knows what his duty is to himself, to his family, and to his country, but there is one fact that stands paramount. The example of the class of men that represents this society to the younger medical men throughout the country is a great one, and should not be lost sight of. If you can go about among the younger medical men and say, "I am already in the service," that young man is going to think, and he is more apt to offer himself to the service of his country if he knows that we have already offered ourselves freely to our government, to be used as the government sees fit. And I hope that the men of this society will offer themselves freely for the service of their country to be used as the army authorities may see best and fit to make use of them.

DR. D. BRYSON DELAVAN, New York City: I represent that type which does not know just what to do. I do not know what my place is. For a year and a half I struggled to establish a hospital in Paris for the repair of injuries of the head and face. At the end of the first year sixty thousand men were needing repair in that department alone, simply from France and Belgium. I am chairman of the Executive Committee of the American Red Cross Hospital in Paris, managed by Dr. Blake. The nearest member of my family last week got an ambulance unit that is on its way to the front, and each week a certain number of us go to the Naval Recruiting Station and examine ears and throats. In other words, not knowing what to do, like all the rest, we are willing to take the first thing that comes to hand and do the best we can. Dr. Shurly has touched the keynote when he said that organization is needed.

DR. MAX A. GOLDSTEIN, St. Louis: Without much circumlocution I would suggest that there be a propaganda of education to put us all in a position to study the question as carefully as we know how. This might be developed by the committee already urged. Personally, at the present time, I should like to place at your service for this organization and its committee, the *Laryngoscope* and its editor, for any publicity work you require whenever and as often as you require it, and to place at your disposal furthermore the mailing list of the office of the *Laryngoscope*, which includes the names of three thousand men of this country.

Final Conclusions Regarding Amputation of the Epiglottis for Tuberculosis.

By LORENZO B. LOCKARD, M. D., Denver.

Amputation of the epiglottis is as safe a procedure as tonsillectomy. In over four hundred cases, in the majority of whom vitality was reduced to the lowest ebb, not a single direct fatality resulted.

The objection most frequently advanced is that no operative procedures are justified unless the lesion is so circumscribed as to be capable of complete excision.

It must be borne in mind that in nine cases out of ten the sole object is palliation, and usually in patients upon whom all other methods of treatment have failed.

Even when a cure is considered possible, removal of all involved tissue is not invariably essential to success. It has been demonstrated repeatedly that when an epiglottis is universally infiltrated, and only the upper half or two-thirds is removed, the stump rapidly recedes to normal. It is rare that the disease recurs in the stump.

Healing of the stump is usually rapid and complete, regardless of the extent or rapidity of progress in the complicating pulmonary and laryngeal lesions, hence the question of advisability of operating in this manner hinges upon two questions: in incurable cases what amount of relief may be anticipated, and in cases otherwise hopeful, what influence will the operation have upon the accompanying laryngeal lesions?

A number of patients are living upon whom the operation was performed from ten to twelve years ago, as a palliative procedure, and in whom the resultant unexpected improvement in lungs and larynx was so complete that eventual arrest ensued.

The improvement in accompanying lesions can be ascribed in large part to the same influence that occasions pulmonary betterment: the removal of pain, increase in nourishment taken, improved sleep, and lessened cough.

Another important factor is the increased accessibility of the larynx to treatment. After the epiglottis is removed it is often easy to destroy by galvanocauterization lesions that were previously completely hidden. It is a fact that a surprising subsidence in these accompanying processes is frequently observed.

The chief indication for amputation, however, is and must remain, the relief of pain, without thought to the eventual cure of either laryngeal or pulmonary diseases.

The one great contraindication, in the author's experience, is that form of epiglottic involvement, either infiltrative or ulcerative, in which the process is beginning to involve the base of the tongue or the pharyngoepiglottic folds.

The entire lateral walls and base of the tongue may and usually do break down within a few weeks after the very first signs of disease become manifest. In these cases only is amputation absolutely contraindicated. In all others, if pain exists and is uncontrollable by other treatment, excision is advisable. No bad effect upon the general health has been observed. Complete anesthesia can be obtained, and the operation itself need not, in the average case, require more than a half minute.

Ozena and Asphyxiating Gas. By MARCEL NATIER, M. D., Paris, France. The writer finds a melancholy pleasure in presenting the lamentable history of a young soldier, in that he feels that the recital of his case goes to prove conclusively that ozena is but a local manifestation of a constitutional condition, a fact which Natier had repeatedly maintained in previous communications.

In October, 1915, a soldier, twenty-four years of age, who had always been in perfect health, no hereditary or venereal affection, received five bullet wounds and was rendered unconscious by a bomb of asphyxiating gas. His mask had dried up and was valueless. He recovered consciousness only to fall into repeated syncope. He was carried to the rear, transferred to Vitry le Francois, where he had to remain three weeks because of his febrile condition. He suffered most excruciating pains from his nose to the bifurcation of his bronchi, and received special care. Five weeks after the accident he was removed to Paris, to a base hospital, where he remained six months. During all this time he could not swallow except with most excruciating pains. He then was admitted, March 18, 1916, to the Salpetriere, where his extreme muscular weakness, respiratory troubles, ozena and vomiting were noted. On October 25th the writer first saw him and noted remarkable collapse of both alae, ozena active, marked anemia. The collapse of the alae caused insomnia and mouth breathing, with pain. To relieve this the patient put pieces of a match in each nostril on going to sleep. The ozena was noticed three or four months after the accident for the first time. Irrigations with warm salt water, while causing pain, was followed by amelioration.

As the patient was always well until his injuries, the writer feels justified in tracing the causal factor of his ozena to the asphyxiating gas and the subsequent functional disorders.

Ordinarily ozena is considered inseparable from old and far advanced atrophic rhinitis traceable back to the first years of life, the atrophy slowly developing.

In this soldier the determining cause was at the time sudden and violent, the effect cruel and deplorable. That the unfortunate man did not succumb immediately or in the general delay at the arrival of succor is marvelous. The poor fellow was fortunate in that he did not develop tuberculosis, as thousands of others do. The patient recovered.

The writer says, in his opinion ozena is not a true mobid entity, idiopathic or real, but a unique and always a symptomatic expression of a profound localized disturbance of the general health. Once again it is verified, and supports the assertion that ozena is but a consequence, distant more often, but also under color of exceptional events of the physiologic calamity. The cause of the latter is of less importance. Its intensity merits consideration.

We are compelled to discard, as he has always done in his studies of the subject, the various theories more or less fantastic, and in particular the microbic theory, invoked to explain the production of ozena.

(1) Sarcoma of the Nasal Septum; (2) Laryngoepiglottidean Cyst. By MAX A. GOLDSTEIN, M. D., St. Louis.

Male, aged fifty-six years. Eighteen months ago began to be troubled with occasional obstruction of left side of nose, continuing about a month, followed by relief and then recurrence. No history of epistaxis. Latterly two or three nosebleeds, not very profuse. No headache or pain of any kind. Loss of fifteen pounds in weight in six months.

Nasal Examination.—Mass on septum obstructing left side. Right surface of septum infiltrated and thickened, causing some obstruction on that side. Nasopharynx negative. Throat negative. No evidence of involvement of the accessory sinuses.

Operation.—September 26, 1916, mass, together with the entire septum, being extirpated. Recurrence after one month. Histologic examination of mass showed round cell sarcoma.

A CASE OF LARYNGOEPIGLOTTIDEAN CYST.

Boy, twelve years old, came under observation September 27, 1915. Had been hoarse since he was one month old. This hoarseness had been ascribed by family physician to a "cold." No laryngologic examination had at any time been made. The condition seemed to remain quiescent all these years until shortly before the boy was brought to the writer for examination, at which time he had become very dyspneic. The dyspnea was quite marked; patient anemic and frail, not cyanotic, and unable to speak above a whisper. There had not been much difficulty in swallowing. No regurgitation of food. Laryngeal examination showed a mass the size of a walnut on the left side, involving the laryngoepiglottidean region. There was no fever. Mass was yielding to touch and could easily be palpated with the finger. Mass incised, the contents consisting of clear, yellow, sticky fluid. Subsequent examination of vocal cords, examination of which was heretofore impossible because of obstruction of view by the mass, was negative. Boy regained the use of his voice, though through habit he would speak in an undertone. No recurrence of cyst to date, and boy now speaks in normal voice.

The following officers were elected for the ensuing year (Fortieth Anniversary): DR. J. SOLIS COHEN, Honorary President; DR. THOMAS H. HALSTED, President; DR. JOHN E. RHOADES, First Vice-President; DR. D. CROSBY GREENE, Second Vice-President; DR. HARMON SMITH, Secretary; DR. J. PAYSON CLARK, Treasurer; DR. JOSEPH H. BRYAN, Librarian. Council: DR. THOMAS HUBBARD, DR. ALEXANDER MACCOY, DR. THOMAS R. FRENCH, and DR. JOSEPH L. GOODALE.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Meeting of October 2, 1917.

HERMAN B. COHEN, *Reporter.*

PROGRAM.

Etiology and Specific Treatment of Hay Fever. DR. A. PARKER HITCHENS.

Dr. Hitchens emphasized the importance of a diagnosis, obtained by (1) a thorough rhinoscopic examination to exclude any abnormality; (2) a specific diagnosis, dependent upon the season of the year, spring and summer producing the pollens of common grasses, fall the pollen of ragweed. The author suggested a button, containing a cover-glass coated with a glycerine mixture, by which means the particular pollen inhaled may be identified; (3) skin tests made similar to vaccines, using a tablet triturate of pollen. At the end of an hour and again in 24 hours, the reaction is noted as is also the pollen used. Negative tests may show an immediate area of redness but which does not increase in size.

Prophylaxis. An initial dose of extract containing 0.0025 mg. nitrogen given two or three months before the season; subsequent injections at 5 to 7 day intervals. Phophylactic injections are not successful in every case.

Treatment in season. Individual consideration is necessary, as the period of relief varies. Few persons are relieved for 24 hours only and in these cases daily doses are necessary. Normal periods of relief are five days. The author then went into the history of hay fever with a view of determining the exciting causes. Many causes have been mentioned, *e. g.*, external irritant dust, plant emanations, various odors, atmospheric conditions, solar heat, constitutional defects of hay fever patients, nervous diathesis. Dr. Hitchens enumerated the uric acid theory of 1868; the bacterial theory of 1869; the pollen theory of Blackley followed by the nasal theory (nasal disease); the three factor theory, a combination of the existing opinions, requiring three elements viz: constitutional defect, pathological nasal condition and external irritant. The last mentioned theory persists to the present day. The work of Dunbar in 1903 was then reviewed; his experimental work, corroborating the work of Blackley; his work upon the chemistry of the pollen determining the exciting cause or special substance causing the symptoms of hay fever. The special substance found was an albuminous body or tox-albumen. This latter substance Dunbar was able to demonstrate as being thermostable; acid stable. Enzymes such as pepsin and trypsin were unable to destroy it. Lastly, it is precipitated by complete saturation with ammonium sulphate. The toxin-antitoxin theory of Dunbar was soon attacked from the anaphylaxis standpoint and it is now agreed that the symptoms of hay fever are merely a manifestation of hypersusceptibility of the tissues to the albumen of certain pollens.

Treatment by pollen vaccine. This treatment has given further evidence in favor of the anaphylactic nature of hay fever. Dr. Hitchens went into details in the preparation of the vaccine. He claims that 88 per cent. of patients treated have reported entirely free from symptoms or are markedly benefited. Dr. Hitchens gave the following conclusions:

1. Hay fever is due to a protein constituent of the pollen of plants.

2. The hay fever attack is a manifestation of hypersusceptibility to this protein and the disease is to be classed among the anaphylactic phenomena.

3. By means of very simple skin tests the exact varieties of pollen to which an individual is hypersusceptible may be determined.

4. It is a well known fact that hypersusceptible animals may be desensitized by the use of minute doses of the protein to which they are susceptible.

5. In like manner hay fever patients may be desensitized to the pollens to which they are hypersusceptible by the subcutaneous injection of extracts from these pollens.

6. By the repeated injection of proper pollen extracts before the season a certain percentage of patients may be immunized to hay fever.

7. At least 80 per cent. of the patients receiving pollen vaccines may expect considerable relief or entire freedom from symptoms throughout their season.

A discussion of Dr. Hitchens' paper was entered into by the following men:

Dr. George W. MacKenzie was unwilling to commit himself to any one form of treatment in hay fever. In the last three or four years he has been using or injecting a filtrate of the patients nasal secretions. He claims to obtain positive results in 90 per cent. of his cases. If a pollen is present on the nasal mucous membrane, he states that it will be present in the secretion collected for the filtrate.

Dr. Otis Stickny uses an electro-cautery to desensitize the membrane. He thought that the general condition of the patient, particularly the gastro-intestinal tract, should be looked after.

Dr. Lewis, with the use of vaccine, gets relief in 75 per cent. of cases: none are absolutely cured. Some relief is obtained with bacterial vaccines. He advocates surgical interference where necessary. In 15 per cent. of cases he obtains no relief whatever from the use of vaccine.

Dr. Stein of Lancaster, in quoting 15 cases in seven years, obtained improvement in 8 cases and slight improvement in 7. In the present year he has obtained five clinical cures and one failure.

Dr. Stauffer wished to have an explanation of dog emanations.

Dr. Gile emphasized the importance of diagnosing the case of hay fever. He stated that some cases of rhinorrhea are often mistaken for hay fever. Some cases are due to polypi; therefore, a thorough rhinologic examination is necessary.

Meeting of November 6, 1917.

SYMPOSIUM OF THE LARYNX.

Anatomy of the Larynx. Dr. Robert F. Ridpath.

Dr. Ridpath emphasized the following points: The larynx should be considered the root of a tree; the bronchi and their branches, the branches of a tree. In this manner the study of this portion of the respitory organs becomes simplified.

Secondly, the incompleteness of the tracheal cartilages permit the rings to come together in the act of respiration. The cricoid (signet) ring being the only complete ring of cartilage of the larynx. Concerning the thyroid cartilage; up to the age of puberty it remains practically the same siz. It acts as a shield to the vocal bands. Particular emphasis was laid upon the motion of the arytenoids in their articulation with the cricoid. The motion as carried out by these cartilages is threefold, viz. downward, forward and inward, resulting in the approximation of the vocal bands. The reverse motion produces relaxation or the opening of the vocal bands. This latter motion of upward, backward and outward is produced by the posterior crico-arytenoid. The epiglottis and glottic region were clearly described.

Emphasis was laid upon the difference in production of tone and pitch of the voice, the latter being produced by the tightening of the thyro-cricoid ligament simulating the tightening of the strings of the violin. Tone is dependent upon the individual anatomy and is aided by other methods.

The speaker concluded with the description of the sinuses pyriformi and the aryepiglottic folds. It is these latter folds that overlap or cover the orifice to protect the larynx from foreign bodies and not the epiglottis.

Physiology of the Larynx. Dr. Herman B. Cohen.

Dr. Cohen emphasized the knowledge of the cartilage articulations in order to understand the workings of the larynx, the two main articulations being the crico-arytenoid and the crico-thyroid. It was the cricoid that is the movable cartilage and not the thyroid. The sole opener of the larynx is the posterior crico-arytenoid and the closers of the larynx are the lateral crico-arytenoid, the thyro-arytenoid, the vocales and the single muscle, the transverse arytenoid. The tensors of the cords are the two crico-thyroids, which bring the cricoid to the thyroid. In discussing the muscles of phonation in comparison to the muscles of respiration with particular reference to the importance of these two groups of muscles, the former was conceded as being subordinate to the latter. The fact was brought out, that it was the posterior crico-arytenoid that was so commonly affected in unilateral paralysis of the larynx. The large source of nerve supply with especial reference to the recurrent laryngeal nerve was then given in detail. The epiglottis, as was mentioned earlier, is not essential for the protection of the laryngeal orifice from foreign bodies but does assist in the modification of the voice.

Pathology of the Larynx. Dr. Nathan P. Stauffer.

The speaker mentioned as the most common diseases in the ordr of frequency the following: Tuberculosis, diphtheria,papilloma, carcinoma; edemas; foreign body, lues, typhoid or post-typhoid paralysis. Describing each in detail he emphasized the ulceration of tuberculosis as conglomerate. He warned the physicians that where there was sudden hoarseness in typhoid fever to be prepared with a tracheotomy set. Dr. Stauffer concluded with quoting a few cases as presenting possible effects of infantile paralysis.

Presentation of Patients.

Dr. Fielding O. Lewis presented a case of laryngostomy on a young man for stenosis following the swallowing of Sloan's liniment.

A second case of laryngostomy performed upon a boy, 19 years of age, the boy having received a severe injury by falling on a stage, and striking his larynx. This patient had a web across the cords with a small opening in the web.

A third patient, luetic, 32 years of age. Stenosis of the larynx. He also had a tracheotomy performed.

Dr. Edgar J. Stein presented a patient with total laryngectomy for dyspnea, aphonia and pain due to carcinoma. Preliminary tracheotomy was performed. Operation performed five years ago and at the present time the patient is comfortable and is able to take care of himself.

Dr. Robert F. Ridpath presented a man complaining of hoarseness due to papilloma on a vocal cord, its attachment being by a pedicle, causing the small tumor to disappear and hide beneath the cord.

Dr. Rowand read a report on a case of acute emphysematous swelling on the anterior aspect of the larynx.

Patient, female, 32; sudden coughing spell; temporary closure of the glottis followed immediately by complete relief. Few days later she complained of a lump in the throat and a constant tickling and desire to cough. Examination revealed a round swelling on the anterior aspect of the thyroid cartilage near the cricoid articulation. Pressure caused severe coughing and discomfort and slight crepitus was elicited. During the next six or seven weeks the patient used iodine ointment and gentle massage. About two months later the condition disappeared as suddenly as it came on. There has been no recurrence. Dr. Rowland diagnosed the case as an *emphysematous cyst* based upon the following facts: Slight crepitus, transient duration, its onset during a coughing spell, and its sudden disappearance.

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